Fishery Management Report No. 94-5

# 1993 Area Management Report for the Recreational Fisheries of the Kodiak and Alaska Peninsula/Aleutian Islands Area

by

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Alaska Department of Fish and Game

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The Fishery Management Reports series was established in 1989 for the publication of an overview of Division of Sport Fish management activities or management goals in a specific geographic area. Fishery Management Reports are intended for fishery and other technical professionals, as well as lay persons. Distribution is to state and local publication distribution centers, libraries and individuals and, on request, to other libraries, agencies, and individuals. This publication has undergone editorial and peer review within Region II, Division of Sport Fish.

# PREFACE

This report is divided into two sections. *Section I* presents an introductory overview of the Kodiak Management Area. Included in this section is a general geographic and organizational description of the management area; an overview of the Alaska Board of Fisheries processes and schedules for the management area; an inventory of the available fishery resources of the management area; an historical perspective of recreational angler effort and harvest within management area waters; an approximation of the economic value of the recreational fisheries of the management area; a general description of stocking, research, management, partnership, aquatic education, viewing, and access activities being conducted in the management area; and a summary of the major fishery and social issues that presently occur in the Kodiak Management Area. Recommendations for solving these social issues including, but not limited to, research, management, access, regulatory changes, aquatic education, stocking, or habitat options are also presented. *Section II* provides a more detailed summary of all the major fisheries that occur in the Kodiak Management Area. Included in this section is a description and historical perspective of each fishery, the objective governing the management of each fishery (if any have been established), description of the recent performance of each fishery, a description of recent Board of Fisheries actions with respect to each fishery, a description of any social or biological issues surrounding each fishery, and a description of any ongoing or recommended research or management activities directed at each fishery. Most of the sport fisheries in the Kodiak Management Area do not have fisheries management plans associated with them and are not restricted by emergency order inseason. Inseason management approaches are discussed for applicable fisheries. If information is available, the fishery outlook for the immediate future is presented.

TABLE OF CONTENTS

TABLE OF CONTENTS (Continued)

LIST OF TABLES

LIST OF TABLES (Continued)

LIST OF TABLES (Continued)

LIST OF FIGURES

LIST OF APPENDICES

LIST OF APPENDICES (Continued)

LIST OF APPENDICES (Continued)

## *SECTION I*:
## MANAGEMENT AREA OVERVIEW

*Section I* presents an introductory overview of the Kodiak Management Area. Included in this section are a general geographic and organizational description of the management area; an overview of the Alaska Board of Fisheries processes and schedules for the management area; an inventory of the available fishery resources of the management area; an historical perspective of recreational angler effort and harvest within management area waters; an approximation of the economic value of the recreational fisheries of the management area; and a general description of stocking, research, management, partnership, aquatic education, viewing, and access activities being conducted in the management area.

## Management Area Description

The Kodiak sport fish management area (KMA) includes all waters of the Kodiak Island Archipelago, the Alaska Peninsula south of a line from Cape Douglas to Cape Menshikoff, and the Aleutian Islands (Figure 1). This management area is comprised of two sport fishing regulatory areas: the Kodiak Regulatory Area and the Alaska Peninsula/Aleutian Islands Regulatory Area. With the exception of the road accessible streams located on Kodiak and Adak islands, Cold Bay, and Dutch Harbor, virtually all sport fisheries in the KMA are remote and relatively difficult to access. A coastal climate with high precipitation and mild temperatures characterize much of the KMA.

Principal land managers in the KMA include the U.S. Fish and Wildlife Service, National Park Service, U.S. Forest Service, various Native Corporations, and the State of Alaska. The communities of Kodiak and Dutch Harbor/Unalaska, with populations of 14,600 and 4,300, respectively, are the two largest communities. The area also includes approximately 20 villages with year-round inhabitants and a major U.S. Navy Base on Adak Island.

Management and research functions for the KMA are based in the Kodiak area office. The Division of Sport Fish staff stationed in Kodiak include one permanent full time Fisheries Biologist III (Len Schwarz) and one permanent full time clerical position (Doris Mensch) which is shared with the Division of Wildlife Conservation staff. The Fisheries Biologist III position acts as the area management biologist and the project leader for all area research projects. This position is assisted by one permanent seasonal Fisheries Biologist I position (Bob Begich) who acts as crew leader for two of the three area research projects and by six supporting permanent seasonal technicians. Support is also provided to the area staff from the Sport Fish Division southcentral regional Research and Technical Services (RTS) staff.

## Alaska Board of Fisheries Activities

The process of developing fishing regulations appropriate for fisheries in the KMA occurs within the established Alaska Board of Fisheries process. Public input concerning regulation changes and allocation issues is provided for in this process through various means including direct testimony to the Board of Fisheries and through participation in local fish and game advisory committees. These advisory committees have been established throughout Alaska to assist the Boards of Fish and Game in assessing fisheries and wildlife issues and proposed regulation changes in areas that might be affected. Most active committees meet at least once each year, usually in the fall prior to the Board meetings. Staff from the Division of Sport Fish and other divisions are often invited to attend the committee meetings. In this way, advisory committee meetings allow for direct public interaction with staff involved with resource issues of local concern. Within the KMA there are seven Fish and Game Advisory Committees: Chignik, False Pass, King Cove, Kodiak, Nelson Lagoon, Sand Point, and Dutch Harbor/Unalaska.

Under the current operating schedule, the Board of Fisheries meets on a 3-year cycle. Proposals regarding the Kodiak Regulatory Area were heard during 1992/1993 Board meetings. Alaska Peninsula/Aleutian Island proposals will be heard during the 1994/1995 meetings.

Fisheries Resource Inventory

Sport anglers fishing KMA waters can target all five species of North Pacific salmon (pink *Oncorhynchus gorbuscha,* coho *O. kisutch,* sockeye *O. nerka,* chum *O. keta,* and chinook *O. tshawytscha*) in both fresh and salt water. In addition, there are saltwater sport fisheries for halibut (*Hippoglossus stenolepis*) and rockfish (*Sebastes*). There are also fisheries for Dolly Varden (*Salvelinus malma*)/Arctic char (*Salvelinus alpinus*) and steelhead/ rainbow trout (*O. mykiss*) as well as fisheries for stocked landlocked coho and Arctic grayling (*Thymallus arcticus*).

The Division of Sport Fish classifies sport fisheries into one of three levels based on a combination of yield (harvest) and angler-cost criteria. Level 1 fisheries are defined as high yield, low angler-cost fisheries. These fisheries are typically entry level fisheries that anglers can participate at little direct cost. Level III fisheries are defined as low yield, high cost fisheries. These fisheries are typically remote, guided, or special management fisheries that have a high cost associated with participation. Level II fisheries fall between Level I and Level III fisheries and are defined as basic yield, intermediate-cost fisheries.

The KMA offers diverse fishing opportunities for the recreational angler. Stocked lakes and road-accessible salmon and Dolly Varden fisheries near the City of Kodiak and on Adak and Unalaska islands provide Level I fisheries. Marine waters near Kodiak, Adak, and Unalaska islands offer Level II fisheries for halibut and rockfish. Other examples of Level II fisheries in the KMA include boat-accessible salmon fisheries on Kodiak and Afognak islands. Remote steelhead trout and chinook salmon stocks, such as those in the Karluk and Ayakulik rivers which are accessible by aircraft, offer Level III fisheries.

Recreational Angler Effort

From 1977 through 1992[1], an average of 95,530 angler-days have been expended by recreational anglers fishing KMA waters (Table 1). Recreational angler effort increased annually from 1977 through 1982, after which effort generally stabilized between 90,000 and 110,000 angler-days through 1990. The estimated sport effort for the KMA peaked during 1991 with 139,500 angler days. (Mills 1992). The 1992 effort of 107,480 angler days was almost the same as the recent 10-year average of 106,420 angler days (1982-1991).

Historically, nearly 80% of the total recreational angler effort from the KMA has occurred in the waters of the Kodiak Regulatory Area. From 1977 through 1992, waters of the Kodiak Regulatory Area have supported an average of 73,960 angler-days of sport fishing effort (Table 1). In comparison, average sport effort in the Alaska Peninsula/Aleutian Island Regulatory Area from 1977 through 1992 has been 21,570 angler-days (Table 1).

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[1] Effort and harvest figures cited in this report are from Mills 1979-1993, unless otherwise noted. Effort and harvest figures presented in Mills 1993 are found in Appendix J. Numbers presented in the text throughout this report have been rounded off to the nearest ten. Numbers in the tables represent the actual estimate or count.

The most popular fishery in the KMA in terms of recreational angling effort expended since 1985 has been the fresh and marine waters of the Kodiak Road System (Figure 2). Since 1985, these waters have accounted for just over half of the recreational angling effort expended in the KMA. The Buskin River is the most heavily fished stream both along the Kodiak Road System and in the Kodiak Regulatory Area, averaging about 20,000 angler-days of fishing effort annually (Table 2). Other major freshwater fisheries along the Kodiak Road System occur on the Pasagshak, Olds, and American rivers; the various road accessible lakes near Kodiak; and in the marine waters of Chiniak and Marmot bays (Table 2).

The fresh and marine waters of Adak Island have represented the second most popular fishery in terms of recreational angling effort expended since 1985 (Figure 2). Adak Island waters have accounted for an average of approximately 15,400 angler-days of recreational fishing effort since 1985 (Table 3). Other popular fisheries in the KMA include the fresh and marine waters of the Afognak/Shuyak Islands group, the Kodiak Remote Zone (notably the Karluk and Ayakulik River systems), Cold Bay, and Unalaska Island.

Recreational Fish Harvest

From 1977 through 1992, an average of 101,200 fish have been harvested (kept) by sport anglers fishing KMA waters (See Table 4; Appendices A1-A13). As was the case with recreational angler effort, harvests from KMA waters generally increased from 1977 through 1982, after which harvests have remained relatively stable. About 45% of the historical sport harvest has been salmon, of which nearly half has been pink salmon (Table 4). Dolly Varden/Arctic char have comprised the largest single species harvest accounting for nearly 25% of the historical harvests (Table 4, Figure 3).

On average, Kodiak Regulatory Area waters have accounted for 76,090 sport harvested fish from 1977 through 1992, or 75% of the average KMA sport harvest (Table 5). Dolly Varden, pink and coho salmon, and halibut have accounted for most of the historical sport harvest. From 1977 through 1992, these four species have accounted for an average of approximately 70% of the total sport harvest from Kodiak Regulatory Area waters (Table 5).

Waters of the Alaska Peninsula/Aleutian Islands Regulatory Area have accounted for an average of 24,250 sport harvested fish from 1977 through 1992, or about 24% of the average KMA sport harvest (Table 6). Dolly Varden and pink, coho, and sockeye salmon have accounted for most of the historical sport harvest. From 1977 through 1992, these four species have accounted for an average of about 70% of the total sport harvest from Alaska Peninsula/Aleutian Islands Regulatory Area waters (Table 6).

During 1992, 80,160 fish were harvested by sport anglers fishing KMA waters (Table 4). This harvest was 20% below the historical average harvest from KMA waters and represented 2.5% and 3.0% of the total statewide and southcentral region sport harvests, respectively, during 1992 (Mills 1993). The largest fisheries in terms of fish harvested during 1992 were for coho, halibut, Dolly Varden and pink salmon. These species accounted for 21%, 13%, 14%, and 14%, respectively, of the total 1992 KMA sport harvest.

Recreational Fish Catch and Release

Estimates of the number of fish caught and released by sport anglers fishing KMA waters became available for the first time during 1990 (Mills 1991). Estimates, computed for 1992 using the statewide harvest survey (Mills 1993), show that of the 234,540 fish caught by sport anglers fishing KMA waters, 66% (or 154,390 fish) were released (Table 7). Considerable variability exists in the percent of fish released depending on the species and regulatory area fished (Figure 4). For example, less than half of the halibut caught by sport anglers were returned, whereas 82% of the steelhead caught were released (Table 7).

Commercial and Subsistence Salmon Harvests

Salmon returning to KMA streams are also harvested by various commercial fisheries. In all cases, harvests in the commercial fisheries (Appendices B1-B5 and C) are much larger than associated sport fisheries. Fish stocks of the KMA are also harvested in various subsistence and personal use fisheries. Harvests in these fisheries are relatively small when compared to either the commercial or sport fishery.

Economic Value of Sport Fisheries

There are no direct estimates available to assess the economic value of the recreational fisheries of the KMA. The Jones and Stokes (1987) survey of southcentral sport fisheries did not specifically address the sport fisheries of the KMA. A rough approximation of the economic value of the sport fisheries of the KMA can be made, however, by applying the direct expenditures per angler-day values estimated for southcentral Alaska resident and non-resident sport anglers through the Jones and Stokes survey to the estimated sport effort of the KMA (Table 8). Based on this method, the economic value of the sport fisheries of the KMA during 1986 was approximately 12 million dollars. This compares to an estimated value of 127 million dollars for southcentral Alaska sport fisheries during 1986 (Jones and Stokes 1987).

Stocking Program Inventory

Stocking has been used to increase and diversify the opportunities available to sport anglers fishing KMA waters. Various species and life stages have historically been stocked including anadromous chinook smolt and coho salmon fry along with landlocked coho, rainbow trout fingerlings and Arctic grayling fry. Nearly all of the stocking has taken place within waters of the Kodiak Road System; however, some stockings have occurred in several remote waters of the KMA (Chignik, Port Lions, Ouzinkie).

During 1993, approximately 594,340 hatchery-reared fish were stocked into KMA waters (Table 9). Most of the stockings were comprised of anadromous coho salmon smolt into lakes (Figure 5). Of these coho salmon stockings, approximately 350,000 were stocked into remote lakes (Jenifer, Crescent Lake and Little Kitoi) primarily to provide fish for commercial fisheries. Other species stocked included anadromous chinook salmon smolts and nonanadromous coho salmon fingerlings, rainbow trout fingerlings, and Arctic grayling fry. These stockings were aimed at providing fish for recreational anglers.

Ongoing Research and Management Activities

There are four major research activities ongoing in the KMA. The first involves continued operation of the Buskin weir to determine the numbers and age, sex, and length compositions of the coho and sockeye salmon immigrations to the Buskin River. The second research program involves the steelhead trout resource of the Karluk River. Historically, this resource has supported one of the largest steelhead trout returns in Alaska. Kelt emigration data from the late 1980s, however, indicated that this stock was depressed. Current objectives of the research program are to obtain estimates of population size and the number of steelhead trout harvested in the commercial and subsistence fisheries. This research project was initiated in 1991. A third research program was initiated in 1992 and involves the dockside sampling of recreationally harvested marine groundfishes at the Kodiak boat harbor. This program has the objective of defining the species composition and age, sex, and size compositions of recreational groundfish harvests returning to the Kodiak boat harbor. The long-term goal of this project is to determine important life history characteristics of these species necessary to assess the long-term health and sustained yields of these stocks. Finally, a fourth research program was initiated in June 1993 and deals with the chinook salmon populations in the KMA, primarily the Karluk, Ayakulik and Chignik rivers. Age, sex and size data were collected from the Karluk and Ayakulik River escapement. Age, sex and size data were also collected from the sport fish harvest from those rivers. On the Karluk River, every angler fishing on Karluk spit was interviewed as were all anglers floating past the weir in order to document the chinook harvest. A creel survey was conducted in the lagoon and lower river in order to estimate the sport fish harvest. One exit location on the Karluk was not sampled because the private landowner would not allow state personnel to operate from their land, so a complete harvest estimate from the Karluk was not obtainable for 1993. The U.S. Fish and Wildlife Service interviewed all anglers fishing on the Ayakulik. In Chignik, the commercial chinook purse seine catch from the lagoon was sampled for age, sex and size data. These data are assumed to be similar to that of the escapement.

There are several routine management activities that are ongoing in the KMA. These activities include:

1. participation in the Alaska Board of Fisheries process,
2. fishery monitoring and inseason fishery management (a list of emergency orders issued for KMA fisheries from 1989 through 1993 is presented in Appendix H),
3. involvement with the public,
4. habitat monitoring and permit review, and
5. annual fish stockings.

Partnership, Aquatic Education, and Viewing Activities

During 1993, one partnership program was completed in the KMA. The project involved constructing a handicap fishing platform along the Buskin River. This venture was with the Kodiak Kiwanis and cost $10,000. There are currently no specific aquatic education programs in place in the KMA.

In many areas of Alaska, the public is requesting increased opportunity to view fish and their various behaviors. Due to the remote nature of much of the KMA, development of such opportunities is, for the most part, impracticable. Opportunities are available, however, to observe salmon spawning along many of the road accessible streams along the Kodiak, Adak, and Unalaska Road Systems. The Buskin River weir also allows viewing opportunity for ongoing salmon research.

Access Programs

The Federal Aid program stipulates that a portion of the federal funds passed on to states be used to increase opportunities for angler access to sport fisheries. Seven potential access projects have been identified in the KMA. A prioritized listing of these projects is:

1. parking areas for the Russian, American, and Olds rivers,
2. footbridge development within the Pasagshak Recreational Area,
3. Mill Bay Beach parking lot improvement,
4. access trail and handicap fishing pier for Gertrude Lake,
5. boat launch and parking area for Womens Bay,
6. shoreline fishing access development for Near Island, and
7. land purchase along the Karluk River for fishing access.

A synopsis of each potential project is presented in Appendix I.

Management Area Fishery Objectives

The Division of Sport Fish recommended several priority criteria to guide the establishment of fishery objectives (internal memo from Norval Netsch, Sport Fish Director to Carl Rosier, Fish and Game Commissioner, dated 3/27/91). These include:

1. **Management and protection of existing fish resources.** This criteria directs that Divisional activities should strive to manage and protect Alaska's wild stocks of fish resources for future generations.

2. **Public use and benefits of existing fish resources.** This criteria directs that Divisional activities should strive towards making Alaska's fishery resources available for public use and benefit on a sustained yield basis.

3. **Rehabilitation of depressed stocks and damaged habitat.** This criteria directs that Divisional activities should strive to restore and maintain fish habitat damaged by man's activities.

4. **Enhancement of natural production or creation of new opportunities.** This criteria directs that the Division should pursue creation of new sport fishing opportunities through rehabilitation of natural stocks or creation of new fisheries where these opportunities do not negatively affect other fisheries.

To date, no specific fishery objectives have been developed for KMA sport fisheries. It is anticipated that specific objectives will be developed in

the near future. Participation of the public in the development of these objectives is desired and will be solicited.

Although no specific fishery objectives have been established to date, an assumption of past and current fisheries management has been to assure for the sustained yield of the various fisheries stocks that occur within the KMA while assuring for continued and, where possible, expanded opportunity to participate in fisheries targeting these stocks.

Major Biological and Social Issues for the KMA

Compared to other management areas in Region II, there are relatively few major biological or social issues surrounding the KMA sport fisheries. The few major issues that do exist are as follow:

1. Karluk River Steelhead Trout. Historically, the Karluk River has supported one of the largest steelhead trout returns in Alaska. Kelt emigration data during the late 1980s, however, indicated that this stock was depressed. A research project, described in the section on steelhead trout, was initiated in 1992 to assess this resource. Initial results are that the population has recovered and the 1993 spawning population was at near record levels.

2. Karluk River Chinook Salmon (harvest). There has been an increase in the angler use of Karluk River chinook salmon stocks. If the record escapements achieved during the period of 1988-1991 return to more average levels, increasing sport harvest may require more definitive management. A creel survey was initiated in June 1993 along with escapement, age, sex and length sampling. These data will allow for the establishment of escapement goals and fisheries monitoring to ensure escapement goals are met.

3. Karluk River Chinook Salmon (access). In recent years, there has been a marked increase in the participation in the Karluk River chinook salmon fishery. Increase in participation has occurred in spite of a lack of access facilities for recreational anglers. The department is currently investigating land purchase alternatives to address this issue.

4. Kodiak Road System Salmon Escapements. Fisheries for salmon along the Kodiak Road System are closed above the Chiniak Highway bridges from August 1 through September 10. The Buskin River is closed above Bridge #1. These closure dates were selected to provide protection for spawning pink salmon. The closure has been extended to protect returning coho salmon if the coho run is determined to be weak. Assessment of inriver returns is accomplished by a weir operated on the Buskin River and escapement surveys on other important streams.

5. Stocking Program. Although over 100,000 rainbow trout, Arctic grayling, and nonanadromous salmon have been stocked into KMA waters in recent years, effort directed towards these stocked fish and harvest of the stocked fish has remained low. Greater education of the fishing public is recommended to increase utilization of these stocked fish.

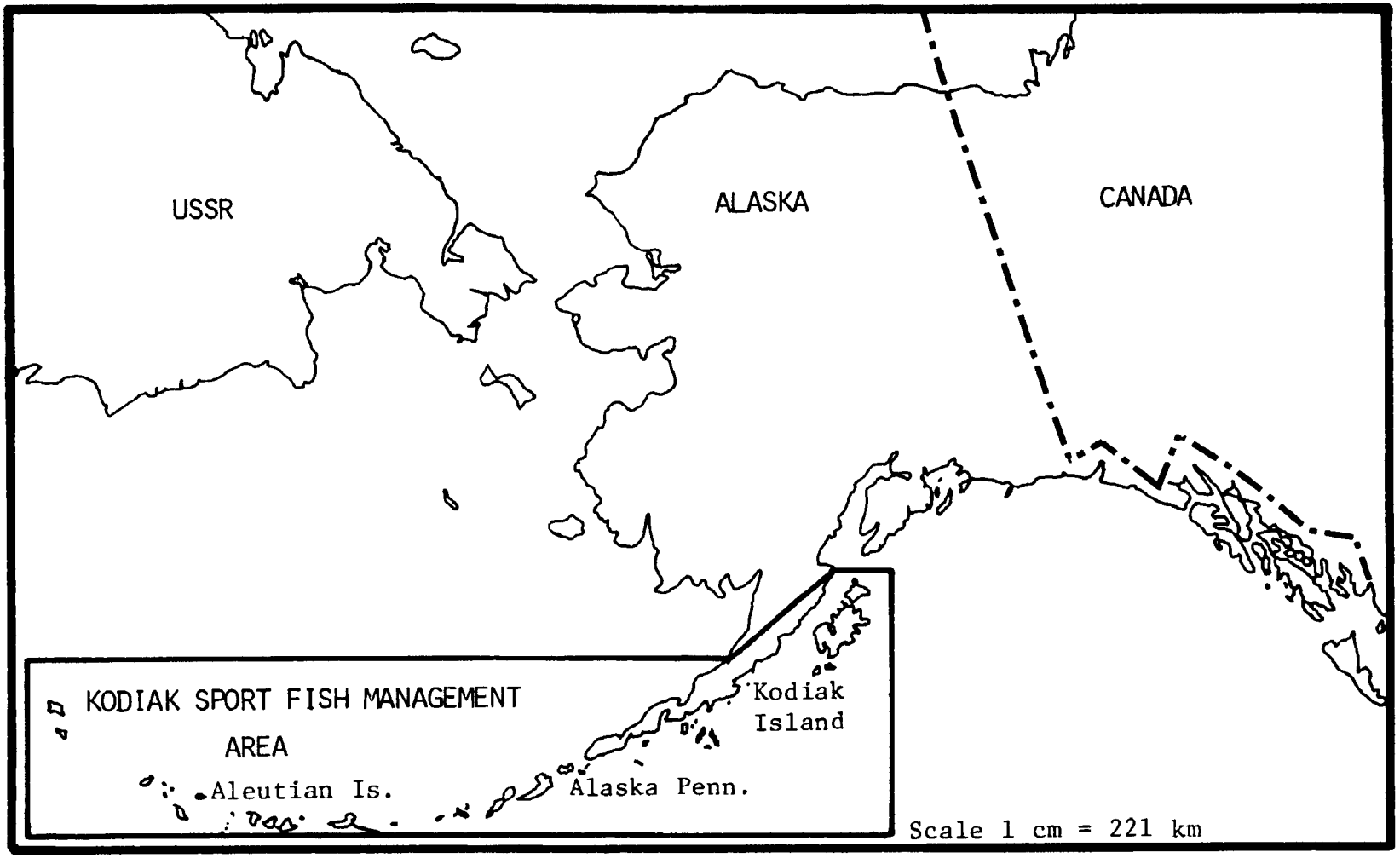


Figure 1. The Kodiak Management Area: Kodiak Island Archipelago, Alaska Peninsula, and Aleutian Islands.

Table 1. Number of angler-days of effort expended by sport anglers fishing Kodiak Management Area waters, 1977-1992.

| | | Alaska Peninsula/Aleutian Island Regulatory Area | | | | | | Kodiak Island Regulatory Area | | | | | |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| | | Salt Water | | Fresh Water | | Area Total | | Salt Water | | Fresh Water | | Area Total | |
| Year | KMA Total | Ang-Days | Percent | Ang-Days | Percent | Total | % of KMA | Ang-Days | Percent | Ang-Days | Percent | Total | % of KMA |
| 1977 | 53,144 | | | | | 11,581 | 22 | 14,957 | 36 | 26,606 | 64 | 41,563 | 78 |
| 1978 | 53,268 | | | | | 8,766 | 12 | 19,063 | 43 | 25,439 | 57 | 44,502 | 84 |
| 1979 | 72,014 | | | | | 12,969 | 18 | 23,124 | 39 | 35,921 | 61 | 59,045 | 82 |
| 1980 | 84,667 | | | | | 19,760 | 23 | 27,646 | 43 | 37,261 | 57 | 64,907 | 77 |
| 1981 | 93,645 | 11,828 | 44 | 15,378 | 57 | 27,206 | 29 | 29,857 | 45 | 36,582 | 55 | 66,439 | 71 |
| 1982 | 105,752 | 9,075 | 37 | 15,439 | 63 | 24,514 | 23 | 41,113 | 51 | 40,125 | 49 | 81,238 | 77 |
| 1983 | 103,818 | 8,035 | 46 | 9,329 | 54 | 17,364 | 17 | 40,217 | 47 | 46,237 | 54 | 86,454 | 83 |
| 1984 | 101,126 | 10,428 | 57 | 8,038 | 44 | 18,466 | 18 | 34,213 | 41 | 48,447 | 59 | 82,660 | 82 |
| 1985 | 97,893 | 3,153 | 24 | 9,899 | 76 | 13,052 | 13 | 33,032 | 39 | 51,809 | 61 | 84,841 | 87 |
| 1986 | 98,479 | 6,479 | 30 | 14,834 | 70 | 21,313 | 22 | 31,762 | 41 | 45,404 | 59 | 77,166 | 78 |
| 1987 | 98,969 | 7,445 | 32 | 15,874 | 68 | 23,319 | 24 | 38,671 | 51 | 36,979 | 49 | 75,650 | 76 |
| 1988 | 91,631 | 8,484 | 38 | 13,822 | 62 | 22,306 | 24 | 30,522 | 44 | 38,803 | 56 | 69,325 | 76 |
| 1989 | 110,868 | 11,420 | 46 | 13,286 | 54 | 24,526 | 22 | 35,485 | 41 | 50,857 | 59 | 86,342 | 78 |
| 1990 | 116,197 | 16,057 | 46 | 18,537 | 54 | 34,594 | 30 | 34,969 | 43 | 46,634 | 57 | 81,603 | 70 |
| 1991 | 139,478 | 20,851 | 49 | 21,793 | 51 | 42,644 | 31 | 42,668 | 44 | 54,166 | 56 | 96,834 | 69 |
| 1992 | 107,482 | 13,903 | 61 | 8,802 | 39 | 22,705 | 21 | 36,485 | 43 | 48,292 | 57 | 84,777 | 79 |
| MEAN[a] | 95,527 | 10,597 | 43 | 12,472 | 57 | 21,568 | 22 | 32,112 | 43 | 38,975 | 57 | 73,959 | 78 |

[a] Averages for the fresh and saltwater fisheries for the Alaska Peninsula/Aleutian Islands Regulatory Area do not add up to the total average for the regulatory area due to incomplete data for the years 1977 through 1980.

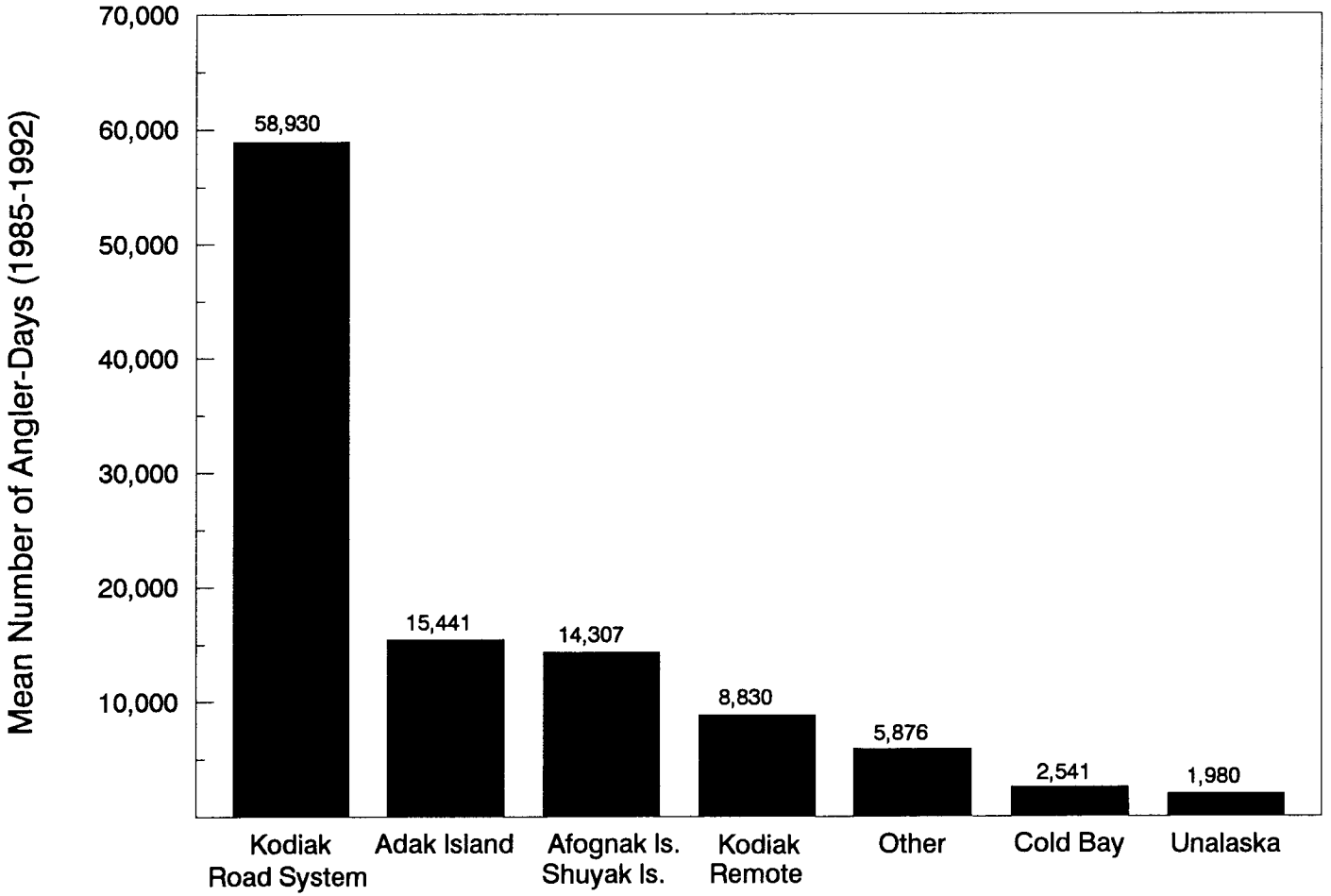


Figure 2. Distribution of fishing effort expended by recreational anglers fishing KMA waters, 1985-1992.

Table 2. Number of angler-days of effort expended by sport anglers fishing Kodiak Regulatory Area waters, by location, 1977-1992.

| Fishery | 1977 | 1978 | 1979 | 1980 | 1981 | 1982 | 1983 | 1984 | 1985 | 1986 | 1987 | 1988 | 1989 | 1990 | 1991 | 1992 | Mean (85-92) |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| Kodiak Road System | | | | | | | | | | | | | | | | | |
| Buskin River & Mouth | 12,681 | 11,072 | 19,336 | 20,149 | 19,403 | 20,404 | 18,354 | 24,108 | 34,109 | 24,506 | 16,481 | 18,457 | 26,347 | 19,560 | 21,991 | 15,482 | 22,116 |
| Pasagshak River & Mouth | 4,712 | 3,403 | 5,785 | 6,754 | 4,434 | 3,344 | 7,608 | 4,751 | 6,117 | 5,504 | 5,723 | 5,111 | 5,707 | 8,471 | 5,876 | 6,359 | 6,109 |
| Olds River & Mouth | | | | | | | 886 | 3,145 | 1,200 | 3,578 | 1,938 | 4,147 | 5,378 | 3,247 | 5,583 | 5,079 | 3,769 |
| American River & Mouth | | | | | | | 2,770 | 1,974 | 729 | 4,419 | 3,622 | 3,038 | 3,506 | 3,359 | 4,291 | 3,276 | 3,280 |
| Roadside Lakes | | | 1,258 | 1,257 | 982 | 2,474 | 2,918 | 2,492 | 1,562 | 582 | 1,390 | 1,677 | 969 | 1,666 | 1,541 | 2,261 | 1,456 |
| Other Fresh Waters | | | | | | | 3,324 | 6,257 | 4,721 | 3,165 | 1,607 | 1,965 | 3,555 | 2,172 | 5,206 | 3,757 | 3,269 |
| Marine Boat | | | | | | | | | 2,823 | 9,939 | 14,868 | 7,070 | 9,007 | 11,547 | 14,328 | 15,587 | 10,646 |
| Marine Shore | | | | | | | | | 4,403 | 7,321 | 10,110 | 9,146 | 9,559 | 7,115 | 11,122 | 7,507 | 8,286 |
| Total | 17,393 | 14,475 | 26,379 | 28,160 | 24,819 | 26,222 | 35,860 | 42,727 | 55,664 | 59,014 | 55,739 | 50,611 | 64,028 | 57,137 | 69,938 | 59,308 | 58,930 |
| Kodiak Remote Area | | | | | | | | | | | | | | | | | |
| Karluk River System | | | | | | 3,514 | 2,216 | 1,339 | 3,158 | 1,070 | 3,919 | 2,530 | 2,609 | 3,393 | 4,547 | 5,430 | 3,332 |
| Red River System | | | | | | | 554 | 1,272 | 91 | 317 | 638 | 377 | 1,165 | 815 | 1,780 | 3,340 | 1,065 |
| Other Fresh Waters | 9,213 | 10,964 | 9,542 | 9,101 | 11,763 | 10,389 | 5,908 | 2,391 | 1,352 | 2,463 | 2,303 | 1,552 | 2,211 | 3,531 | 2,864 | 2,767 | 2,380 |
| Marine Boat | 6,144 | 6,850 | 7,750 | 9,796 | 17,391 | 21,086 | 24,042 | 22,268 | 11,157 | 2,168 | 3,164 | 2,052 | 1,738 | 2,126 | 4,183 | 3,332 | 3,740 |
| Marine Shore | 8,813 | 12,213 | 15,374 | 17,850 | 12,466 | 20,027 | 16,175 | 11,945 | 12,129 | 2,214 | 758 | 1,911 | 4,348 | 4,074 | 3,774 | 1,109 | 3,790 |
| Total | 24,170 | 30,027 | 32,666 | 36,747 | 41,620 | 55,016 | 48,895 | 39,215 | 27,887 | 8,232 | 10,782 | 8,422 | 12,071 | 13,939 | 17,148 | 15,978 | 14,307 |
| Afognak/Shuyak/Barren Islands | | | | | | | | | | | | | | | | | |
| Fresh Water | | | | | | | 1,699 | 718 | 774 | 29 | | 109 | 213 | 718 | 487 | 541 | 407 |
| Marine Boat | | | | | | | | | 486 | 7,890 | 6,610 | 7,163 | 8,507 | 7,454 | 7,003 | 7,401 | 6,554 |
| Marine Shore | | | | | | | | | 30 | 2,001 | 2,519 | 3,020 | 1,523 | 2,355 | 2,258 | 1,549 | 1,907 |
| Total | 0 | 0 | 0 | 0 | 0 | 0 | 1,699 | 718 | 1,290 | 9,920 | 9,129 | 10,292 | 10,243 | 10,527 | 9,748 | 9,491 | 8,830 |
| Regulatory Area Total | 41,563 | 44,502 | 59,045 | 64,907 | 66,439 | 81,238 | 86,454 | 82,660 | 84,841 | 77,166 | 75,650 | 69,325 | 86,342 | 81,603 | 96,834 | 84,777 | 82,067 |

Table 3. Number of angler-days of effort expended by sport anglers fishing Alaska Peninsula/Aleutian Islands Regulatory Area waters, by location, 1977-1992.

| Fishery | 1977 | 1978 | 1979 | 1980 | 1981 | 1982 | 1983 | 1984 | 1985 | 1986 | 1987 | 1988 | 1989 | 1990 | 1991 | 1992 | Mean (85-92) |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| Adak Island | | | | | | | | | | | | | | | | | |
| Marine | | | | | | 4,896 | 5,080 | 6,710 | 884 | 1,638 | 2,033 | 3,875 | 4,177 | 9,187 | 12,316 | 3,546 | 4,707 |
| Fresh Water | | | | | | 4,026 | 5,445 | 3,323 | 5,531 | 11,694 | 12,417 | 11,642 | 9,569 | 15,242 | 14,963 | 4,862 | 10,734 |
| Total | | | | | | 8,922 | 10,525 | 10,033 | 6,415 | 13,332 | 14,450 | 15,517 | 13,746 | 24,429 | 27,279 | 8,358 | 15,441 |
| Unalaska Island | | | | | | | | | | | | | | | | | |
| Marine | | | | | | | | | 816 | 1,808 | 1,569 | 129 | 541 | 1,461 | 3,215 | 1,452 | 1,374 |
| Fresh Water | | | | | | | | | 1,596 | 362 | 21 | 197 | 239 | 56 | 1,161 | 1,218 | 606 |
| Total | | | | | | | | | 2,412 | 2,170 | 1,590 | 326 | 780 | 1,517 | 4,376 | 2,670 | 1,980 |
| Cold Bay | | | | | | | | | | | | | | | | | |
| Marine | | | | | | 1,211 | | 212 | 35 | 452 | 1,895 | 1,376 | 1,080 | 870 | 801 | 1,163 | 959 |
| Fresh Water | | | | | | 5,271 | | 692 | 555 | 1,251 | 1,132 | 327 | 1,320 | 2,342 | 2,634 | 3,094 | 1,582 |
| Total | | | | | | 6,482 | | 904 | 590 | 1,703 | 3,027 | 1,703 | 2,400 | 3,212 | 3,435 | 4,257 | 2,541 |
| Other | | | | | | | | | | | | | | | | | |
| Marine | | | | | 11,828 | 2,968 | 2,955 | 3,506 | 1,418 | 2,581 | 1,948 | 3,104 | 5,442 | 4,539 | 6,121 | 7,742 | 4,112 |
| Fresh Water | | | | | 15,378 | 6,142 | 3,884 | 4,023 | 2,217 | 1,527 | 2,304 | 1,656 | 2,158 | 897 | 2,455 | 896 | 1,769 |
| Total | 11,581 | 8,766 | 12,969 | 19,760 | 27,206 | 9,110 | 6,839 | 7,529 | 3,635 | 4,108 | 4,252 | 4,760 | 7,600 | 5,436 | 8,576 | 8,638 | 5,876 |
| Regulatory Area Total | | | | | | | | | | | | | | | | | |
| Marine | | | | | 11,828 | 9,075 | 8,035 | 10,428 | 3,153 | 6,479 | 7,445 | 8,484 | 11,240 | 16,057 | 22,453 | 13,903 | 11,152 |
| Fresh Water | | | | | 15,378 | 15,439 | 9,329 | 8,038 | 9,899 | 14,834 | 15,874 | 13,822 | 13,286 | 18,537 | 21,213 | 10,020 | 14,686 |
| Total | 11,581 | 8,766 | 12,969 | 19,760 | 27,206 | 24,514 | 17,364 | 18,466 | 13,052 | 21,313 | 23,319 | 22,306 | 24,526 | 34,594 | 43,666 | 23,923 | 25,838 |

Table 4. Number of fish harvested (kept) by sport anglers fishing Kodiak Management Area waters, 1977-1992.

| | | SALMON | | | | | MARINE | | | FRESH WATER FISHERIES | | | | | | | |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| YEAR | TOTAL | PINK | COHO | SOCKEYE | CHINOOK | CHUM | RAZOR CLAMS | HALIBUT | ROCKFISH | DOLLY VARDEN | ARCTIC GRAYLING | RAINBOW TROUT | LANDLOCKED SALMON | STEELHEAD TROUT | SMELT | LING COD | OTHER FISH |
| 1977 | 69,843 | 14,634 | 5,722 | 1,848 | 1,113 | 1,869 | 7,474 | 994 | 2,810 | 15,900 | 153 | 1,747 | 229 | 232 | 9,969 | | 5,149 |
| 1978 | 62,158 | 18,374 | 6,033 | 2,241 | 583 | 1,619 | 3,208 | 1,721 | 1,907 | 16,962 | 370 | 1,590 | 90 | 162 | 4,523 | | 2,775 |
| 1979 | 93,368 | 19,698 | 12,496 | 4,134 | 1,176 | 591 | 8,363 | 3,013 | 3,599 | 33,311 | 209 | 1,345 | 373 | 318 | 2,515 | | 2,227 |
| 1980 | 109,869 | 30,093 | 14,319 | 4,114 | 723 | 1,334 | 11,826 | 3,651 | 1,489 | 30,685 | 1,223 | 3,211 | 628 | 671 | 4,103 | | 1,799 |
| 1981 | 101,440 | 20,650 | 11,696 | 4,698 | 1,264 | 1,166 | 3,452 | 7,711 | 6,663 | 31,482 | 648 | 1,653 | 379 | 313 | 3,024 | | 6,641 |
| 1982 | 131,583 | 30,462 | 14,627 | 4,532 | 2,576 | 2,567 | 1,944 | 9,977 | 4,170 | 36,065 | 707 | 3,715 | 712 | 258 | 2,620 | | 16,651 |
| 1983 | 81,376 | 12,870 | 9,678 | 4,438 | 1,295 | 963 | 2,000 | 8,809 | 3,314 | 30,192 | 136 | 4,348 | 954 | 302 | 0 | | 2,077 |
| 1984 | 109,333 | 17,343 | 15,892 | 6,358 | 1,196 | 1,609 | 7,360 | 9,148 | 9,347 | 28,528 | 361 | 2,828 | 1,547 | 696 | 96 | | 7,024 |
| 1985 | 88,891 | 15,426 | 15,032 | 8,225 | 1,133 | 915 | 4,970 | 7,839 | 4,890 | 22,562 | 870 | 3,119 | 889 | 790 | 25 | | 2,206 |
| 1986 | 122,822 | 17,365 | 25,458 | 6,233 | 830 | 541 | 7,064 | 11,975 | 5,165 | 26,459 | 15 | 928 | 726 | 321 | 0 | | 19,742 |
| 1987 | 92,081 | 13,532 | 19,402 | 4,562 | 1,002 | 792 | 2,155 | 11,465 | 8,547 | 15,831 | 594 | 1,849 | 1,116 | 253 | 462 | | 10,519 |
| 1988 | 126,625 | 31,296 | 21,379 | 8,853 | 2,153 | 1,824 | 4,614 | 9,697 | 13,244 | 22,592 | 382 | 964 | 18 | 853 | 0 | | 8,756 |
| 1989 | 113,458 | 29,176 | 23,700 | 13,173 | 2,226 | 941 | 1,477 | 11,847 | 5,325 | 18,635 | 726 | 1,861 | 1,587 | 788 | 0 | | 1,996 |
| 1990 | 107,324 | 29,997 | 20,065 | 8,224 | 1,156 | 412 | 173 | 11,679 | 6,519 | 21,052 | 86 | 1,528 | 1,330 | 1,120 | 0 | | 3,983 |
| 1991 | 112,837 | 20,789 | 21,327 | 7,057 | 2,752 | 1,656 | 119 | 17,309 | 9,259 | 21,418 | 150 | 1,504 | 3,982 | 613 | 0 | 2,345 | 4,583 |
| 1992 | 80,155 | 11,473 | 16,920 | 8,408 | 2,671 | 913 | 973 | 13,505 | 6,566 | 11,525 | 120 | 1,195 | 887 | 96 | 1,222 | 1,753 | 1,928 |
| MEAN | 101,198 | 20,824 | 15,859 | 6,069 | 1,491 | 1,232 | 4,198 | 8,772 | 5,801 | 23,950 | 422 | 2,087 | 966 | 487 | 1,785 | 2,049 | 6,126 |
| PERCENT | | 20.6 | 15.7 | 6.0 | 1.5 | 1.2 | 4.1 | 8.7 | 5.7 | 23.7 | 0.4 | 2.1 | 1.0 | 0.5 | 1.8 | 2.0 | 6.1 |

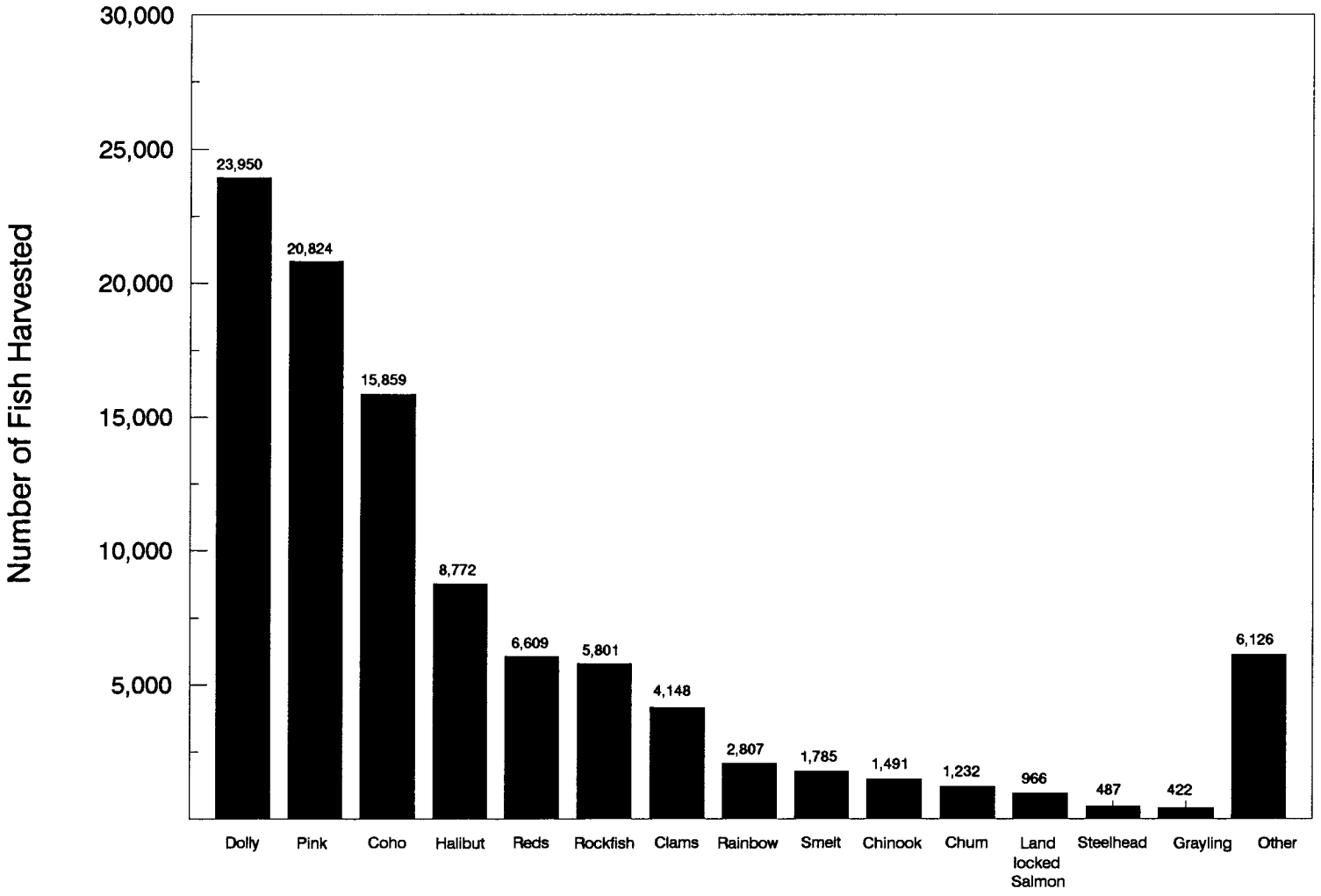


Figure 3. Average composition of the historical harvests of fish by recreational anglers fishing KMA waters, 1977-1992.

Table 5. Number of fish harvested (kept) by sport anglers fishing Kodiak Regulatory Area waters, 1977-1992.

| | | SALMON | | | | | MARINE | | | FRESH WATER FISHERIES | | | | | | | |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| YEAR | TOTAL | PINK | COHO | SOCKEYE | CHINOOK | CHUM | RAZOR CLAMS | HALIBUT | ROCKFISH | DOLLY VARDEN | ARCTIC GRAYLING | RAINBOW TROUT | LANDLOCKED SALMON | STEELHEAD TROUT | SMELT | LING COD | OTHER FISH |
| 1977 | 61,220 | 14,519 | 4,716 | 1,255 | 483 | 1,645 | 7,474 | 994 | 2,810 | 14,536 | 54 | 1,472 | 229 | 232 | 5,652 | | 5,149 |
| 1978 | 53,066 | 17,739 | 4,927 | 1,776 | 350 | 1,287 | 3,208 | 1,721 | 1,907 | 15,805 | 325 | 994 | 90 | 162 | 0 | | 2,775 |
| 1979 | 76,437 | 15,871 | 11,522 | 2,436 | 752 | 500 | 8,363 | 3,013 | 3,599 | 25,421 | 127 | 972 | 373 | 318 | 943 | | 2,227 |
| 1980 | 80,498 | 18,969 | 12,692 | 2,178 | 327 | 525 | 11,826 | 3,651 | 1,489 | 20,663 | 465 | 2,523 | 628 | 671 | 2,092 | | 1,799 |
| 1981 | 70,911 | 12,259 | 10,584 | 1,620 | 789 | 637 | 3,452 | 6,858 | 6,242 | 19,516 | 119 | 886 | 379 | 313 | 2,160 | | 5,097 |
| 1982 | 97,948 | 18,850 | 13,329 | 3,055 | 1,120 | 1,324 | 1,944 | 9,180 | 3,992 | 23,771 | 225 | 3,380 | 712 | 258 | 2,620 | | 14,188 |
| 1983 | 62,204 | 8,936 | 7,823 | 3,150 | 729 | 816 | 2,000 | 8,545 | 3,252 | 19,439 | 126 | 4,296 | 954 | 302 | 0 | | 1,836 |
| 1984 | 89,182 | 12,779 | 14,612 | 5,385 | 921 | 1,321 | 7,360 | 8,179 | 8,231 | 23,092 | 286 | 2,592 | 1,547 | 696 | 0 | | 2,181 |
| 1985 | 76,907 | 13,423 | 13,625 | 7,536 | 762 | 865 | 4,970 | 7,303 | 4,691 | 17,516 | 820 | 2,564 | 106 | 790 | 25 | | 1,911 |
| 1986 | 96,756 | 14,509 | 20,873 | 5,259 | 520 | 336 | 7,064 | 10,960 | 4,479 | 20,657 | 15 | 841 | 0 | 321 | 0 | | 10,922 |
| 1987 | 72,715 | 11,662 | 16,912 | 4,165 | 379 | 560 | 2,155 | 9,869 | 6,501 | 8,763 | 72 | 1,448 | 434 | 253 | 462 | | 9,080 |
| 1988 | 100,164 | 19,044 | 18,809 | 6,222 | 1,564 | 1,546 | 4,614 | 7,749 | 11,369 | 18,663 | 182 | 855 | 0 | 853 | 0 | | 8,694 |
| 1989 | 81,679 | 17,794 | 19,802 | 6,789 | 1,087 | 631 | 1,477 | 10,435 | 5,070 | 14,266 | 189 | 1,534 | 60 | 788 | 0 | | 1,757 |
| 1990 | 61,218 | 7,464 | 13,728 | 6,056 | 996 | 191 | 173 | 9,134 | 3,842 | 14,235 | 86 | 1,484 | 52 | 1,120 | 0 | | 2,657 |
| 1991 | 77,399 | 12,106 | 17,691 | 5,049 | 2,508 | 1,517 | 119 | 12,110 | 8,215 | 13,082 | 98 | 1,296 | 0 | 613 | 0 | 1,352 | 2,995 |
| 1992 | 57,730 | 5,904 | 13,668 | 6,240 | 2,217 | 625 | 973 | 10,860 | 5,652 | 7,389 | 120 | 1,179 | 151 | 96 | 140 | 1,454 | 1,062 |
| MEAN | 76,087 | 13,864 | 13,457 | 4,260 | 969 | 895 | 4,198 | 7,534 | 5,084 | 17,301 | 207 | 1,770 | 357 | 487 | 881 | 1,403 | 4,646 |
| PERCENT | | 18.6 | 17.7 | 5.6 | 1.3 | 1.2 | 5.5 | 9.9 | 6.7 | 22.7 | 0.3 | 2.3 | 0.5 | 0.6 | 1.2 | 1.8 | 6.1 |

Table 6. Number of fish harvested by sport anglers fishing Alaska Peninsula/Aleutian Islands Regulatory Area waters, 1977-1992.

| | | SALMON | | | | | MARINE | | | FRESH WATER FISHERIES | | | | | | | |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| YEAR | TOTAL | PINK | COHO | SOCKEYE | CHINOOK | CHUM | RAZOR CLAMS | HALIBUT | ROCKFISH | DOLLY VARDEN | ARCTIC GRAYLING | RAINBOW TROUT | LANDLOCKED SALMON | STEELHEAD TROUT | SMELT | LING COD | OTHER FISH |
| 1977 | 8,623 | 115 | 1,006 | 593 | 630 | 224 | 0 | 0 | 0 | 1,364 | 99 | 275 | 0 | 0 | 4,317 | | 0 |
| 1978 | 9,092 | 635 | 1,106 | 465 | 233 | 332 | 0 | 0 | 0 | 1,157 | 45 | 596 | 0 | 0 | 4,523 | | 0 |
| 1979 | 16,931 | 3,827 | 974 | 1,698 | 424 | 91 | 0 | 0 | 0 | 7,890 | 82 | 373 | 0 | 0 | 1,572 | | 0 |
| 1980 | 29,731 | 11,124 | 1,627 | 1,936 | 396 | 809 | 0 | 0 | 0 | 10,022 | 758 | 688 | 0 | 0 | 2,011 | | 0 |
| 1981 | 30,529 | 8,391 | 1,112 | 3,078 | 475 | 529 | 0 | 853 | 421 | 11,966 | 529 | 767 | 0 | 0 | 864 | | 1,544 |
| 1982 | 33,635 | 11,612 | 1,298 | 1,477 | 1,456 | 1,243 | 0 | 797 | 178 | 12,294 | 482 | 335 | 0 | 0 | 0 | | 2,463 |
| 1983 | 19,172 | 3,934 | 1,855 | 1,288 | 566 | 147 | 0 | 264 | 62 | 10,753 | 10 | 52 | 0 | 0 | 0 | | 241 |
| 1984 | 20,151 | 4,564 | 1,280 | 973 | 275 | 288 | 0 | 969 | 1,116 | 5,436 | 75 | 236 | 0 | 0 | 96 | | 4,843 |
| 1985 | 11,984 | 2,003 | 1,407 | 689 | 371 | 50 | 0 | 536 | 199 | 5,046 | 50 | 555 | 783 | 0 | 0 | | 295 |
| 1986 | 26,066 | 2,856 | 4,585 | 974 | 310 | 205 | 0 | 1,015 | 686 | 5,802 | 0 | 87 | 726 | 0 | 0 | | 8,820 |
| 1987 | 19,366 | 1,870 | 2,490 | 397 | 623 | 232 | 0 | 1,596 | 2,046 | 7,068 | 522 | 401 | 682 | 0 | 0 | | 1,439 |
| 1988 | 26,461 | 12,252 | 2,570 | 2,631 | 589 | 278 | 0 | 1,948 | 1,875 | 3,929 | 200 | 109 | 18 | 0 | 0 | | 62 |
| 1989 | 31,779 | 11,382 | 3,898 | 6,384 | 1,139 | 310 | 0 | 1,412 | 255 | 4,369 | 537 | 327 | 1,527 | 0 | 0 | | 239 |
| 1990 | 46,106 | 22,533 | 6,337 | 2,168 | 160 | 221 | 0 | 2,545 | 2,677 | 6,817 | 0 | 44 | 1,278 | 0 | 0 | | 1,326 |
| 1991 | 35,948 | 8,683 | 3,636 | 2,088 | 244 | 159 | 0 | 5,199 | 1,044 | 8,336 | 57 | 290 | 3,982 | 0 | 0 | 993 | 1,557 |
| 1992 | 22,405 | 5,569 | 3,252 | 2,168 | 454 | 288 | 0 | 2,645 | 914 | 4,136 | 0 | 16 | 736 | 0 | 1,082 | 299 | 866 |
| MEAN | 24,249 | 6,959 | 2,402 | 1,813 | 522 | 338 | 0 | 1,236 | 717 | 6,649 | 216 | 322 | 609 | 0 | 904 | 646 | 1,481 |
| PERCENT | | 28.7 | 9.9 | 7.5 | 2.2 | 1.4 | 0 | 5.1 | 3.0 | 27.4 | 0.9 | 1.3 | 2.5 | 0 | 3.7 | | 6.1 |

Table 7. Number of fish, by species, harvested and released by sport anglers fishing Kodiak Management Area waters during 1992.

| Species | Kodiak Management Area Total | | | | Kodiak Regulatory Area | | | | Alaska Peninsula/Aleutian Islands Regulatory Area | | | |
|---|---|---|---|---|---|---|---|---|---|---|---|---|
| | Harvest | Release | Total | % Rel. | Harvest | Release | Total | % Rel. | Harvest | Release | Total | % Rel. |
| Dolly Varden | 11,525 | 44,282 | 55,807 | 79 | 7,389 | 37,554 | 44,943 | 84 | 4,136 | 6,728 | 10,864 | 62 |
| Pink Salmon | 11,473 | 29,500 | 40,973 | 72 | 5,904 | 22,656 | 28,560 | 79 | 5,569 | 6,844 | 12,413 | 55 |
| Coho Salmon | 16,920 | 17,779 | 34,699 | 51 | 13,668 | 16,676 | 30,344 | 55 | 3,252 | 1,103 | 4,355 | 25 |
| Halibut | 13,505 | 12,397 | 25,902 | 48 | 10,860 | 9,356 | 20,216 | 46 | 2,645 | 3,041 | 5,686 | 53 |
| Sockeye Salmon | 8,408 | 14,749 | 23,157 | 64 | 6,240 | 13,016 | 19,256 | 68 | 2,168 | 1,733 | 3,901 | 44 |
| Rockfish | 6,566 | 8,924 | 15,490 | 58 | 5,652 | 7,384 | 13,036 | 57 | 914 | 1,540 | 2,454 | 63 |
| Rainbow Trout | 1,195 | 4,796 | 5,991 | 80 | 1,179 | 4,559 | 5,738 | 79 | 16 | 237 | 253 | 94 |
| Chinook Salmon | 2,671 | 6,928 | 9,599 | 72 | 2,217 | 6,368 | 8,585 | 74 | 454 | 560 | 1,014 | 55 |
| Steelhead Trout | 96 | 442 | 538 | 82 | 96 | 442 | 538 | 82 | 0 | 0 | 0 | 0 |
| Chum Salmon | 913 | 5,536 | 6,449 | 86 | 625 | 3,363 | 3,988 | 84 | 288 | 2,173 | 2,461 | 88 |
| Landlocked Salmon | 887 | 1,384 | 2,271 | 61 | 151 | 54 | 205 | 26 | 736 | 1,330 | 2,066 | 64 |
| Arctic Grayling | 120 | 45 | 165 | 27 | 120 | 45 | 165 | 27 | 0 | 0 | 0 | 0 |
| Clams | 973 | 0 | 973 | 0 | 973 | 0 | 973 | 0 | 0 | 0 | 0 | 0 |
| Lingcod | 1,753 | 4,333 | 6,086 | 71 | 1,454 | 1,637 | 3,091 | 53 | 299 | 2,696 | 2,995 | 90 |
| Smelt | 1,222 | 0 | 1,222 | 0 | 140 | 0 | 140 | 0 | 1,082 | 0 | 1,088 | 0 |
| Other | 1,928 | 3,290 | 5,218 | 61 | 1,062 | 2,153 | 3,215 | 61 | 866 | 1,137 | 2,003 | 57 |
| Total | 80,155 | 154,385 | 234,540 | 66 | 57,730 | 125,263 | 182,993 | 68 | 22,425 | 29,122 | 51,547 | 56 |

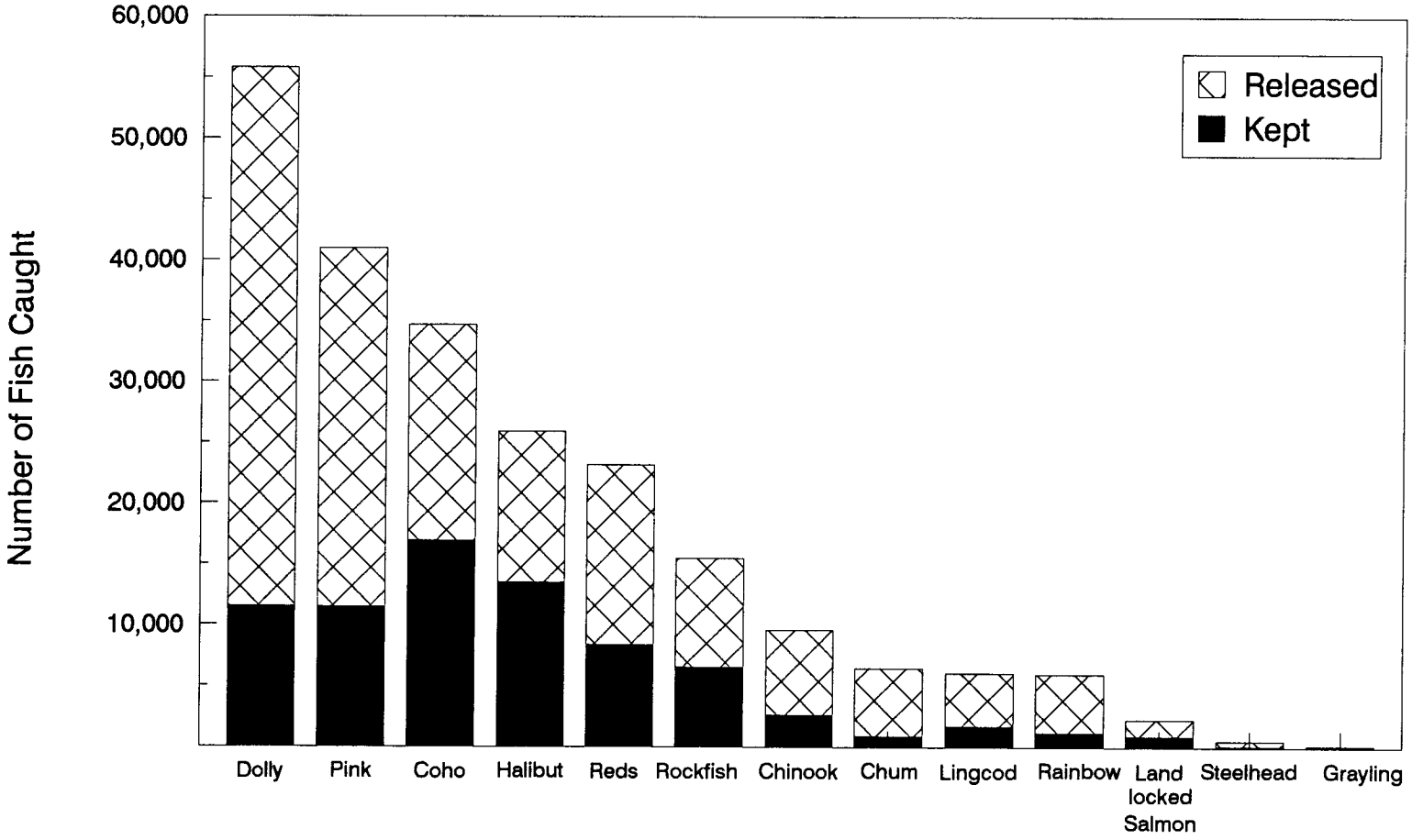


Figure 4. Number of fish kept and released, by species, by recreational anglers fishing KMA waters during 1992.

Table 8. Estimated economic value of KMA sport fisheries during 1986.

| Angler Type | SOUTHCENTRAL ALASKA | | | KODIAK MANAGEMENT AREA | | |
|---|---|---|---|---|---|---|
| | Angler-Days[a] | Expenditures[b] | $/Ang-Day | Angler-Days[a] | $/Ang-Day[c] | Expenditures |
| Resident | 1,153,660 | $ 74,163,000 | $ 64.29 | 68,936 | $ 64.29 | $ 4,431,549 |
| Non-Resident | 201,488 | $ 52,892,000 | $262.51 | 29,473 | $262.51 | $ 7,736,867 |
| BOTH | 1,355,148 | $127,055,000 | ---[d] | 98,479 | ---[d] | $12,168,416 |

[a] From Mills 1987.

[b] From Jones and Stokes 1987.

[c] Computed from southcentral Alaska sport fisheries.

[d] Not computed.

Table 9. Releases of hatchery-reared fish into KMA waters, 1988-1993.

| Species/ Size | Anadromous | Site | Actual 1988 | 1989 | 1990 | 1991 | 1992 | 1993 |
|---|---|---|---|---|---|---|---|---|
| R. Trout | No | Horseshoe L | 1,000 | 1,000 | 1,000 | 1,000 | 1,000 | 1,000 |
| Fingerling | No | Jack L | 1,000 | 1,000 | 1,000 | 1,000 | 1,000 | 1,000 |
| | No | Aurel L | 4,000 | 3,000 | 3,000 | 3,000 | 3,000 | 3,000 |
| | No | Big L | 3,600 | 3,600 | 3,600 | 3,600 | 1,800 | 3,600 |
| | No | Tanignak L | 3,000 | 3,700 | 6,000 | 6,000 | 0 | 6,000 |
| | No | Bull L | 2,000 | 2,000 | 2,000 | 2,000 | 2,000 | 2,000 |
| | No | Cascade L | 3,300 | 3,300 | 3,300 | 3,300 | 800 | 3,300 |
| | No | Lee L | 2,800 | 2,800 | 2,800 | 2,800 | 2,800 | 2,800 |
| | No | Twin L | 3,500 | 4,000 | 4,000 | 4,000 | 4,000 | 4,000 |
| | No | Lilly L | 1,600 | 1,600 | 1,600 | 900 | 800 | 1,600 |
| | No | Heitman L | 3,200 | 3,200 | 3,200 | 3,300 | 800 | 3,250 |
| | No | Long L | 3,600 | 3,600 | 3,600 | 3,600 | 900 | 0 |
| | No | Caroline L | 1,400 | 1,400 | 1,400 | 1,400 | 1,400 | 1,400 |
| | No | Lupine L | 1,600 | 1,600 | 1,000 | 1,600 | 1,600 | 1,600 |
| | No | Dragon Fly L | 1,500 | 1,500 | 1,500 | 1,500 | 1,600 | 1,550 |
| | No | Cicely L | 1,200 | 1,200 | 1,200 | 1,200 | 1,200 | 1,150 |
| | No | Abercrombie L | 4,000 | 3,700 | 3,700 | 3,700 | 3,200 | 3,700 |
| | No | Margaret L | 1,600 | 1,600 | 1,600 | 1,700 | 800 | 1,600 |
| | No | Jupiter L | 3,200 | 3,600 | 3,600 | 3,600 | 900 | 3,600 |
| | No | Saturn L | 2,700 | 2,400 | 2,400 | 2,400 | 600 | 2,400 |
| | No | Dolgoi L | 5,600 | 0 | 5,200 | 5,200 | 1,300 | 5,150 |
| | No | Chignik L | 0 | 0 | 2,000 | 5,000 | 5,000 | 0 |
| | No | Rainbow Total | 55,400 | 49,800 | 58,700 | 61,800 | 31,500 | 53,700 |
| Chinook | Yes | Island L | 0 | 114,400 | 110,000 | 56,000 | 94,700 | 66,950 |
| Smolt | | Mission L | 0 | 0 | 0 | 31,000 | 0 | 0 |
| | Yes | Chinook Total | 0 | 114,400 | 100,000 | 87,000 | 94,700 | 66,950 |
| A. grayling | No | Aurel L | 20,000 | 14,200 | 20,000 | 20,000 | 20,000 | 20,000 |
| Fry | No | Cascade L | 10,000 | 10,000 | 10,000 | 10,000 | 10,000 | 10,000 |
| | No | Cicely L | 10,000 | 8,200 | 10,000 | 10,000 | 10,000 | 10,000 |
| | No | Heitman L | 30,000 | 30,000 | 30,000 | 30,000 | 30,000 | 30,000 |
| | No | Grayling Total | 70,000 | 62,400 | 70,000 | 70,000 | 70,000 | 70,000 |

-continued-

Table 9. (Page 2 of 2).

| Species/ Size | Anadromous | Site | Actual 1988 | 1989 | 1990 | 1991 | 1992 | 1993 |
|---|---|---|---|---|---|---|---|---|
| Coho | Yes | Mayflower L | 6,500 | 6,900 | 2,500 | 6,500 | 3,250 | 16,000 |
| Fingerling | Yes | Island L | 22,500 | 22,500 | 8,500 | 22,500 | 22,500 | 16,000 |
| | Yes | Dark L | 7,500 | 7,500 | 7,500 | 7,500 | 7,500 | 8,000 |
| | Yes | Mission L | 10,000 | 10,000 | 10,000 | 12,700 | 7,500 | 8,000 |
| | Yes | [a]Little Kitoi L | 5,600 | 33,500 | 0 | 0 | 0 | 139,147 |
| | Yes | Orbin L | 7,500 | 7,500 | 7,500 | 5,100 | 3,750 | 8,000 |
| | Yes | Kalsin L | 17,500 | 19,500 | 0 | 19,340 | 8,200 | 8,000 |
| | Yes | Potatopatch L | 7,500 | 7,500 | 0 | 9,500 | 7,500 | 0 |
| | Yes | [a]Crescent L | 241,000 | 203,000 | 0 | 191,400 | 69,000 | 60,000* |
| | Yes | [a]Hidden L | 137,600 | 239,800 | 0 | 250,900 | 0 | 0 |
| | Yes | Ouzinkie L | 20,000 | 20,000 | 0 | 0 | 15,000 | 15,052* |
| | Yes | [a]Jenifer L | 0 | 0 | 0 | 0 | 162,000 | 135,486 |
| | Yes | $Subtotal_{remote}$ | 384,200 | 476,300 | 0 | 442,300 | 306,200 | 334,633 |
| | Yes | $Subtotal_{road}$ | 99,200 | 101,400 | 36,000 | 83,200 | 60,200 | 69,052 |
| | Yes | $Subtotal_{both}$ | 483,200 | 577,700 | 36,000 | 525,500 | 366,400 | 403,685 |
| Coho | No | Pony L | 2,100 | 2,600 | 0 | 2,400 | 0 | 0 |
| Fingerling | No | Southern L | 2,700 | 2,400 | 0 | 0 | 0 | 0 |
| | No | Subtotal | 4,800 | 5,000 | 0 | 2,400 | 0 | 0 |
| | Both | Coho Total | 488,000 | 582,700 | 36,000 | 527,900 | 366,400 | 403,685 |
| All Species | Both | GRAND TOTAL | 613,400 | 809,300 | 264,700 | 746,700 | 562,600 | 594,335 |

[a] Remote location outside of the Kodiak Road System.

* Pre-smolt.

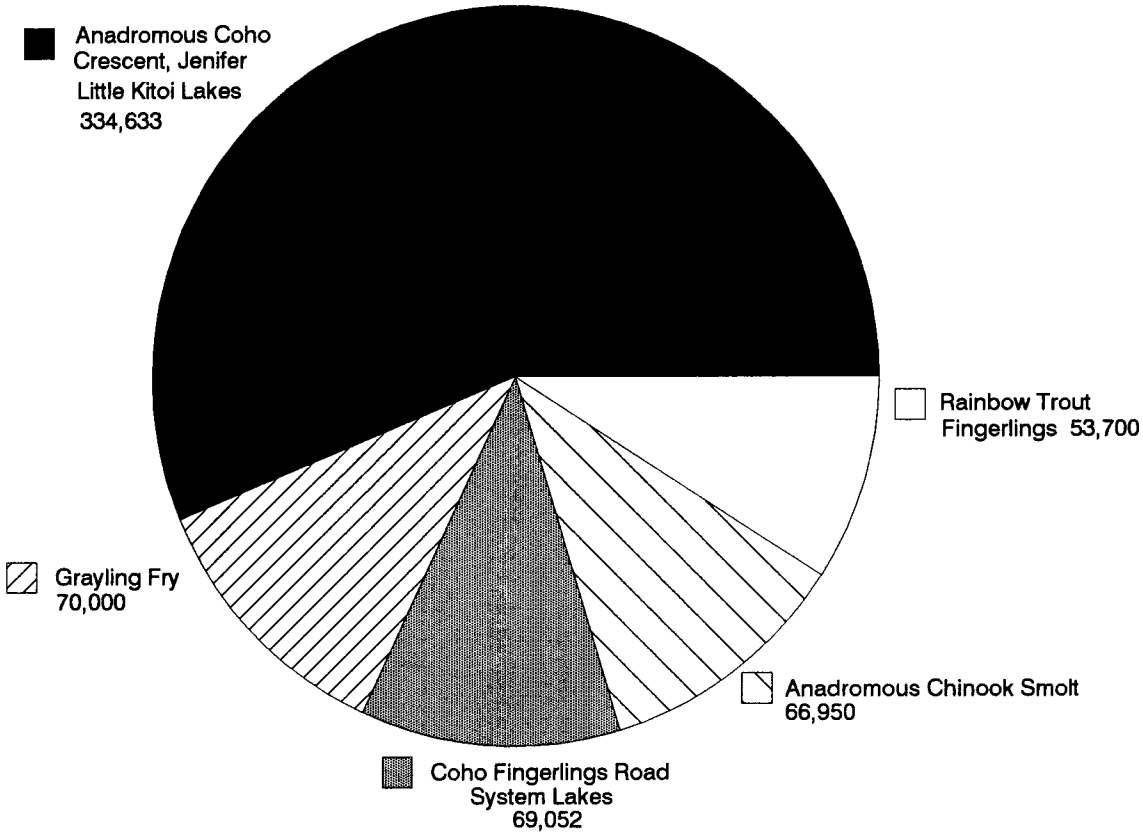


Figure 5. Stockings of hatchery-reared fish into KMA waters during 1993.

## *SECTION II*:
## MAJOR FISHERIES OVERVIEW

*Section II* provides a more detailed summary of all major fisheries that occur in the Kodiak Management Area. Included in this section are a description and historical perspective of each fishery, the objective governing the management of each fishery, description of the recent performance of each fishery, a description of recent Board of Fisheries actions with respect to each fishery, a description of any social or biological issues surrounding each fishery, and a description of any ongoing or recommended research or management activities directed at each fishery. Inseason management approach and/or outlook are presented if applicable. The major fisheries of the Kodiak Management Area which will be discussed are:

KODIAK ROAD SYSTEM FISHERIES
Dolly Varden Fishery
Pink Salmon Fishery
Coho Salmon Fishery
Sockeye Salmon Fishery
Landlocked Lakes Stocked Fisheries

ADAK ISLAND FISHERIES
Dolly Varden Fishery
Salmon Fishery

AFOGNAK/SHUYAK ISLANDS FISHERIES
Coho Salmon Fisheries
Steelhead Trout Fisheries

KARLUK AND RED (AYAKULIK) RIVERS FISHERIES
Steelhead Trout Fisheries
Chinook Salmon Fisheries
Sockeye Salmon Fishery

NORTH KODIAK ISLAND ARCHIPELAGO MARINE FISHERIES

DEVELOPING FISHERIES
Mill Bay Chinook Salmon Fishery
Chiniak Bay Chinook Salmon Fishery

OTHER FISHERIES

## KODIAK ROAD SYSTEM FISHERIES

The Kodiak Road System includes all fresh waters on Kodiak Island east of a line extending southward from Craig Point on the west side of Anton Larsen Bay to the westernmost point of Saltery Cove, and all saltwater bays and all salt waters within 1 mile of all points of land within the freshwater area described above including Spruce, Woody and Long islands (Figure 6). All fisheries in this area can be accessed by road or small boat launched from the City of Kodiak.

The waters of the Kodiak Road System support the most popular fisheries in the KMA in terms of recreational angling effort expended since 1985. Since 1985, these waters have accounted for just over half of the recreational angling effort expended in the KMA. The Buskin River is the most heavily fished stream both along the Kodiak Road System and in the Kodiak Regulatory Area, averaging approximately 20,000 angler-days of fishing effort annually (Table 2).

There are five major freshwater fisheries that occur in the waters of the Kodiak Road System. These fisheries target Dolly Varden, coho salmon, pink salmon, sockeye salmon, and stocked fish in landlocked lakes. Saltwater fisheries along the road target salmon, halibut and rockfish.

### Kodiak Road System Dolly Varden Fishery

#### Fishery Description and Historical Perspective

Dolly Varden are available to anglers throughout the year along the Kodiak Road System, however, peak fishing opportunities typically occur as the fish migrate to and from overwintering (mainly Buskin Lake) and spawning areas (Buskin, American, Olds, and Pasagshak River). Peak harvest typically occurs in May and from mid-July through September. Spawning begins in September and continues into November.

All streams along the Kodiak Road System are open continuously to fishing for Dolly Varden with the exception of an area on the Buskin River extending 300 feet downstream and 300 feet upstream of the Buskin River weir which is closed when the weir is in operation. The daily bag and possession limit is 10 Dolly Varden with no size limit.

From 1985 through 1992, the waters of the Kodiak Road System have accounted for an average harvest of 10,510 Dolly Varden (Table 10). This harvest has represented an average of about one-half of the total KMA Dolly Varden harvest over this period. Major sport fisheries for Dolly Varden in the Kodiak Road System include Buskin, Pasagshak, American, and Olds rivers. Since 1985, these four river systems have accounted for an average of about 70% of the total road system Dolly Varden harvest (Tables 10 and 11). Of these systems, the Buskin River has supported the largest fishery for Dolly Varden. Since 1977, the average harvest of Dolly Varden from the Buskin River has been 8,050 fish (Table 11), making this river the largest in terms of numbers of Dolly Varden harvested in the KMA and one of the largest fisheries for Dolly Varden in Alaska.

A research project to assess the structure and status of the Buskin River Dolly Varden stocks was initiated during the early 1980s. As part of this work, selected fishery and migration statistics have been estimated (Table 12). From 1984 through 1990, creel surveys documented that anglers fishing the Buskin River during the spring Dolly Varden emigration have expended an average of 4,390 angler-days of effort to harvest 4,960 Dolly Varden. From 1988 through 1990, these surveys also collected information on released fish and documented that anglers fishing during the spring emigration have also caught and released an average of 4,880 Dolly Varden. From 1985 through 1992, an average of 44,430 and 24,850 Dolly Varden have been counted emigrating from and immigrating into the Buskin River, respectively.

Recent Fishery Performance

The sport harvest of Dolly Varden from Kodiak Road System waters during 1992 was 4,570 fish, 57% below the historical mean harvest for the area (Table 10). Although the harvest rates dropped significantly, catch figures remained average indicating that anglers were choosing to release more fish during the 1992 fishing season (Table 10). Approximately 81% of the Dolly Varden harvested along the road system were released in 1992. The Buskin River again supported the largest harvest of Dolly Varden on the road system (Table 11).

Management Objectives

Management objectives for this fishery are to provide angling opportunities at a level commensurate with the ability of the fisheries resource to support that level of use.

Recent Board of Fisheries Actions

The last regulation affecting Dolly Varden was adopted during the 1987 Alaska Board of Fisheries meeting. The bag and possession limit for Dolly Varden was reduced from 20 to 10 fish daily and in possession. This change was adopted to prevent against the overharvest of Dolly Varden stocks that occur within the Kodiak Road System.

Current Issues

Emigration counts from the Buskin River drainage were 91,107, 30,725 and 74,451 Dolly Varden in 1990, 1991 and 1992, respectively. Data analysis was unclear as to whether the decrease of 60,000 fish in 1991 was due to a large decrease in population size or to the possibility that the population over-wintered outside the Buskin drainage during the winter of 1990-1991. If the poor emigration count during 1991 (30,725 Dolly Varden) was due to a large decrease in population size, then we could expect to find a reduced number of spawning fish in the American and Olds rivers. Significant reductions of spawning fish could indicate the need for fishery restrictions to assure adequate numbers of spawning fish.

Ongoing Research and Management Activities

A major research program has been underway since 1986 (Murray 1987, 1988a, 1989, 1990) to assess the stock structures and sustainable yields of Dolly Varden in the Chiniak Bay area. Work included operation of weirs to count

emigrating Dolly Varden from Buskin, Genevieve and Louise lakes and mark-recapture experiments to determine population size and stock structure.

Results of this work to date indicate that Chiniak Bay Dolly Varden exhibit a similar life history to that documented for anadromous Dolly Varden in southeastern Alaska. Buskin Lake appears to provide the major overwintering site for Chiniak Bay Dolly Varden stocks. Results of the tagging project, however, suggested that a portion of the adult population may not be overwintering in Buskin Lake every winter. Dolly Varden migrate out of Buskin Lake during the spring and reside primarily in marine waters during the summer. During late summer and fall, they enter streams primarily in the Chiniak Bay area to feed and/or spawn. While the Buskin drainage is the major overwintering site, it is not the only spawning system. Other major spawning locations for Dolly Varden that overwinter in Buskin Lake include the American and Olds rivers; both of which are tributaries of Chiniak Bay. Throughout late summer and fall, Dolly Varden then return to Buskin Lake to overwinter. Because of these life history characteristics, the Dolly Varden of Chiniak Bay can be considered one stock for purposes of fisheries management.

On October 6, 1993, 272 Dolly Varden were tagged in the American River in order to generate a mark and recapture population estimate. As mentioned under the section on current issues, the purpose of monitoring the spawning populations in 1993 was to determine if the large decrease noted in the 1991 emigration was due to a population decline which would also manifest itself on the spawning grounds in 1993. The recapture event occurred 7 days later, October 13, when 345 Dolly Varden were recaptured. Fifteen Dolly Varden from the marking event were recaptured. Mixing of fish was tested for and did occur. The length distribution of fish marked during the first event is just barely significantly different from the length distribution of all fish captured during the second event ($T_{akn}$ = 2.0487, p = .04609). There were more small fish (<350 mm) and fewer large fish during the recapture event.

The American River is not a closed population, and any change in length distribution may indicate departure of some fish and/or arrival of new ones between events. The fish at the American River were low in the river and were ripe but not quite ready to spawn during the marking event. By the recapture event, they had moved upriver but were still generally not yet spawned out. If the population did change between events, this change would most likely be due to arrival of new fish, not departure of spawned-out ones. If only immigration is occurring, then the population estimate is still unbiased.

Testing for equal probability of capture by sex was also investigated. Seventy-five percent of the Dolly Varden captured in the marking event were females. In the recapture event, 82% were females. The recapture probabilities for males and females were not significantly different ($\chi^2$ = 0.898, df = 1, p = 0.343), although with only 15 recaptures this may not be a valid test.

The Petersen population estimate for the American River spawning population in 1993 is 5,881 (relative precision of 95% confidence interval = 45%). This estimate may be somewhat biased due to a shift in the length distribution between events.

The point estimate of 5,881 is the highest ever recorded for the American River, although its 95% confidence limits overlap with past estimates (Table 13). The dramatic population drop observed at the Buskin River weir in 1991 does not appear to have resulted in a noticeable reduction in the 1993 American River spawning population.

On the Olds River, the marking event was on October 5, when 472 fish were tagged and released. The recapture events were on October 8 and 12 when 142 Dolly Varden were recaptured. Seven fish from the marking event were recaptured.

Similar to the American River, the Olds River recapture estimate was checked for mixing and probability of equal recapture. The marked to unmarked ratios during the recapture events were not significantly different ($\chi^2$ = 0.612, df = 2, p = 0.736), although this too may not be a valid test.

The length distribution of fish marked during event 1 was not significantly different from the length distribution of fish caught during the recapture events. There were not enough recaptures to compare the length distribution of recaptures to the distribution of fish released in the marking event.

Sixty-nine percent of the Dolly Varden captured in the marking event were identified as females. In the recapture events, 90% were females. All of the recaptured fish were females. The recapture probabilities for males and females were not significantly different ($\chi^2$ = 2.145, df = 1, p = 0.143), although with only seven recaptures this may not be a valid test.

The Petersen population estimate for the Olds River spawning population in 1993 is 8,454 (relative precision of 95% confidence interval = 63%). The estimate is not biased in any obvious way, but with so few recaptures bias is difficult to detect.

The point estimate of 8,454 is by far the highest ever recorded for the Olds River, although its 95% confidence limits overlap with past estimates (Table 13). We did not detect a drop in the Olds River spawning population linked to the low 1991 weir count.

In summary, the fact that no decrease in the abundance of spawning fish in 1993 was observed supports the possibility that in 1991 a portion of the Chiniak Bay Dolly Varden population did not overwinter in Buskin Lake. Valid age data are lacking for the 1991 emigration and the 1993 spawning population. Knowing if an age class was missing or low in abundance during the 1991 emigration but present during the 1993 spawning population would be a more definitive answer to the question of overwintering in 1993. In any case, the 1993 spawning population appears to be average even if the lower limit of the population estimate is used as the population size.

Recommended Research and Management Activities

The fact that spawning abundance was average to above average in 1993 and that the emigration count from Buskin Lake in 1992 was the second largest count ever recorded, 74,451 (Table 12), there appears to be no conservation problem at this time. Also there is a trend for increased catch and release of Dolly Varden. The catch in 1992 was average. However, the harvest was the lowest

ever documented (Table 10). Due to the evolving nature of the fishery, there is no need to directly study the abundance of Dolly Varden along the Kodiak road system. If catches of Dolly Varden decline, as indicated by the statewide harvest survey, then further study and possible conservation measures could be considered.

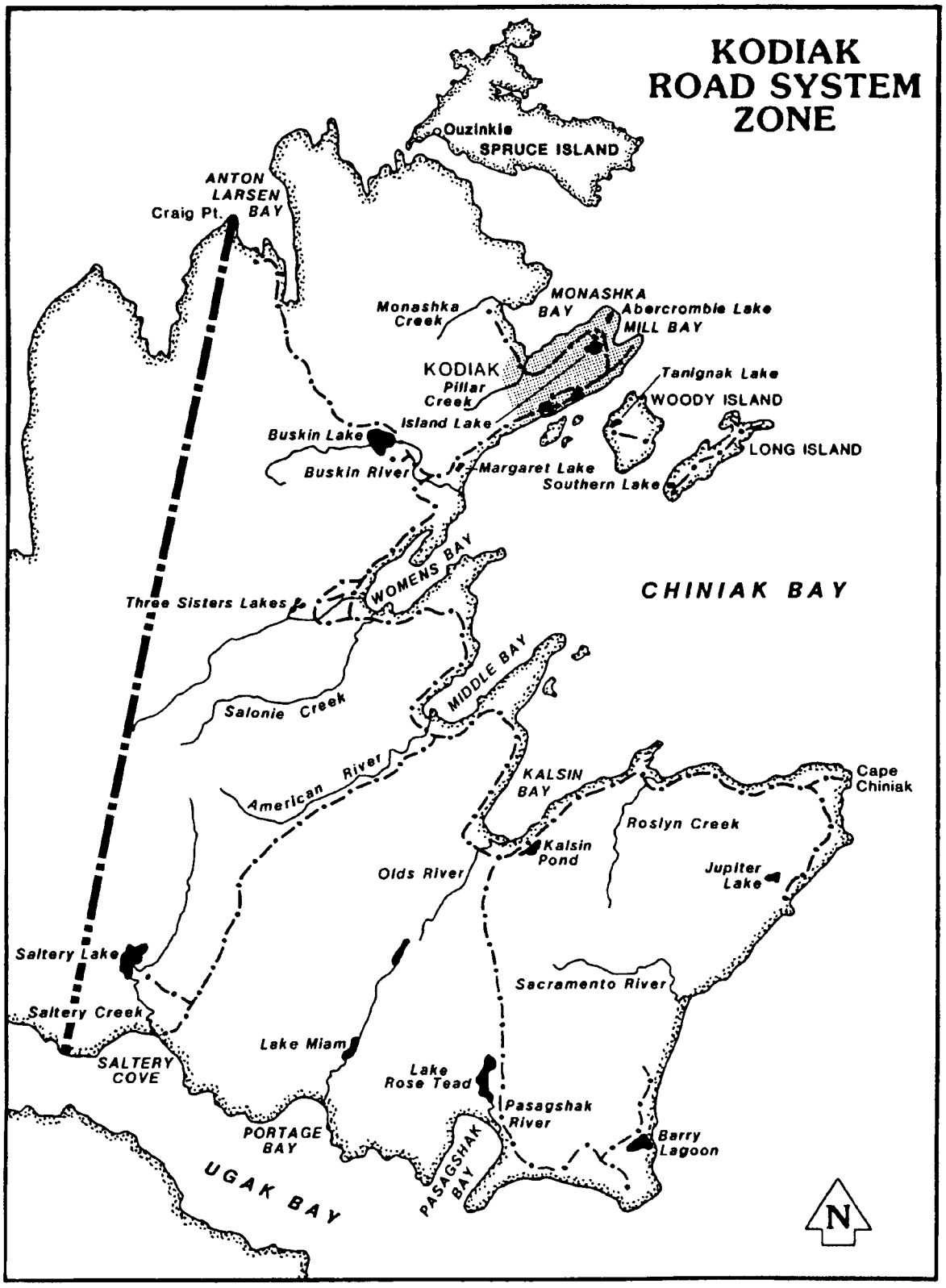


Figure 6. Geographic boundaries of the Kodiak Road System Zone.

Table 10. Harvest of Dolly Varden from Kodiak Road System waters of the Kodiak Management Area, 1985-1992.

| Year | KMA Harvest | Kodiak Road System | | |
|---|---|---|---|---|
| | | Catch | Harvest | % of KMA |
| 1985 | 22,562 | | 13,055 | 57.9 |
| 1986 | 26,459 | | 16,391 | 61.9 |
| 1987 | 15,831 | | 7,859 | 49.6 |
| 1988 | 22,592 | | 12,482 | 55.2 |
| 1989 | 18,635 | | 10,470 | 56.2 |
| 1990 | 21,052 | 29,411 | 9,558 | 45.4 |
| 1991 | 21,418 | 19,165 | 9,718 | 45.5 |
| 1992 | 11,951 | 24,070 | 4,572 | 39.4 |
| MEAN | 22,740 | 24,215 | 10,513 | 51.0 |

Table 11. Harvest of Dolly Varden from selected Kodiak Road System streams, 1977-1992.

| Year | Buskin River | Pasagshak River | American River | Olds River | Total |
|---|---|---|---|---|---|
| 1977 | 10,353 | 617 | | | 10,970 |
| 1978 | 8,003 | 443 | | | 8,446 |
| 1979 | 15,150 | 982 | | | 16,132 |
| 1980 | 9,159 | 475 | | | 9,634 |
| 1981 | 9,376 | 1,162 | | | 10,538 |
| 1982 | 10,167 | 692 | | | 10,859 |
| 1983 | 8,454 | 1,332 | 126 | 10 | 9,922 |
| 1984 | 9,477 | 1,072 | 848 | 249 | 11,646 |
| 1985 | 10,261 | 152 | 46 | 91 | 10,550 |
| 1986 | 10,367 | 933 | 107 | 321 | 11,728 |
| 1987 | 4,238 | 688 | 417 | 290 | 5,633 |
| 1988 | 5,293 | 1,055 | 800 | 200 | 7,348 |
| 1989 | 7,092 | 618 | 448 | 259 | 8,417 |
| 1990 | 4,830 | 138 | 845 | 293 | 6,106 |
| 1991 | 4,337 | 1,124 | 375 | 288 | 6,124 |
| 1992 | 2,319 | 352 | 360 | 360 | 3,391 |
| MEAN | 8,054 | 727 | 437 | 236 | 9,215 |
| MEAN (85-92) | 6,090 | 748 | 425 | 262 | 7,412 |

Table 12. Fishery and migration statistics for the Buskin River Dolly Varden resource, 1981-1992.

| Year | Reference | FISHERY STATISTICS April 15 - June 15[a] Effort (Ang-Days) | Harvest | Catch & Release | FISHERY STATISTICS Entire Year[b] Harvest | Catch & Release | MIGRATION STATISTICS (Weir Counts) Emigration | Immigration[c] |
|---|---|---|---|---|---|---|---|---|
| 1981 | Murray 1982 | | 8,437 | | 9,376 | | | |
| 1982 | NO DATA | | | | 10,167 | | | |
| 1983 | Murray 1984 | | 6,668 | | 8,454 | | | |
| 1984 | Murray 1985 | 3,410 | 5,460 | | 9,477 | | | |
| 1985 | Murray 1986 | | 8,712 | | 10,261 | | 21,797 | 20,545 |
| 1986 | Murray 1987 | 4,284 | 4,065 | | 10,367 | | 40,773 | 24,110 |
| 1987 | Murray 1988a | 4,619 | 4,766 | | 4,238 | | 29,919 | 32,848 |
| 1988 | Murray 1989 | 4,523 | 3,569 | 5,067 | 5,293 | | 31,260 | 34,306 |
| 1989 | Murray 1990 | 5,204 | 5,761 | 5,567 | 7,092 | | 35,605 | 30,851 |
| 1990 | Whalen 1991 | 4,268 | 2,362 | 3,993 | 4,830 | 11,471 | 91,107d | 6,416[e] |
| 1991 | Whalen 1992 | | | | 4,337 | 7,623 | 30,725d | NO DATA[f] |
| 1992 | Whalen 1993 | | | | 2,319 | 8,258 | 74,451[d] | NO DATA[f] |
| Mean | | 4,385 | 5,533 | 4,876 | 7,626 | 9,117 | 44,428 | 24,846 |

[a] Data from creel survey conducted during the emigration period only.

[b] Information from statewide harvest survey.

[c] Immigration counts stop when weir operation stops on approximately October 1. Fish continue to migrate through October and November, so the counts listed here are partial counts of the total immigration.

[d] Vexar mesh was placed over the weir in these years insuring fish over 210 mm total length could not pass through the weir pickets uncounted. In previous years, fish under 300 mm total length could pass through the weir uncounted.

[e] Partial count due to weir washout, not included in mean.

[f] The weir was not operated during the peak immigration period. Data not included in the mean.

Table 13. American and Olds River Dolly Varden population abundance estimates, 1988-1993.

American River

| Year | Abundance | SE | 95% Confidence Interval | |
|---|---|---|---|---|
| | | | Lower limit | Upper limit |
| 1988[a] | 3,048 | 419 | 2,227 | 3,869 |
| 1989[b] | 4,125 | 805 | 2,547 | 5,703 |
| 1990[c] | 3,947 | 540 | 2,889 | 5,005 |
| 1991[d] | 3,375 | 469 | 2,456 | 4,294 |
| 1993[e] | 5,881 | 1,352 | 3,232 | 8,530 |

Olds River

| Year | Abundance | SE | 95% Confidence Interval | |
|---|---|---|---|---|
| | | | Lower limit | Upper limit |
| 1989[b] | 3,856 | 545 | 2,547 | 5,703 |
| 1991[f] | 2,669 | 197 | 2,456 | 4,294 |
| 1993 | 8,454 | 2,715 | 3,132 | 13,775 |

[a] S. Sonnichsen, Alaska Department of Fish and Game, Anchorage, personal communication.

[b] Sonnichsen 1990.

[c] Whalen 1991.

[d] Whalen 1992.

[e] The length distribution shifted between events in 1993, indicating that this estimate may be biased.

[f] Whalen 1992. This estimate is biased due to unequal capture probabilities between sublocations and among size groups.

## Kodiak Road System Pink Salmon Fishery

### Historical Perspective

Pink salmon return to Kodiak Road System streams from mid-July through early September. Peak immigration typically occurs during the second week of August. Spawning occurs in stream reaches both upstream and downstream of road system bridges beginning in August.

The intertidal reach of the Buskin River, considered to be the area downstream of Bridge No. 1, is open to the taking of salmon (other than chinook) year-round. The Buskin River upstream of Bridge No. 1 is closed to fishing for salmon from August 1 through September 10. The remaining streams along the Kodiak Road System which flow into Monashka and Chiniak Bays are open to salmon (other than chinook) fishing year-round in the reaches downstream of the highway bridges, and closed from August 1 through September 10 in reaches upstream of the highway bridges. The bag and possession limit for salmon over 20 inches in length is 5, no more than 2 of which may be sockeye or coho salmon.

From 1985 through 1992, the waters of the Kodiak Road System have accounted for an average harvest of 10,670 pink salmon. This represents an average of 58% of the total KMA pink salmon harvest over this period (Table 14). Nearly 63% of this harvest has been from freshwater systems (Table 14). Pink salmon returning to streams along the Kodiak Road System are also harvested in commercial and subsistence fisheries (Appendices C and D). Commercial harvests are larger than sport harvests whereas subsistence harvests are significantly smaller than sport harvests.

Major sport fisheries for pink salmon in the Kodiak Road System occur on the Buskin, Pasagshak, American, and Olds rivers. Since 1985, these four river systems have accounted for an average harvest of 6,080 pink salmon, or nearly 60% of the total Kodiak Road System pink salmon harvest (Table 15). Of these systems, the Buskin River has supported the largest fishery for pink salmon. Since 1985, the average harvest of pink salmon from the Buskin River has been 3,490 fish (Table 15). Other significant fisheries for pink salmon in this zone occur along the shorelines and marine waters of Chiniak and Ugak bays.

### Recent Fishery Performance

The pink salmon runs along the Kodiak Road system have generally been weak from 1990-1992. Commercial harvest of pinks in Monashka and Chiniak bays averaged 275,000 from 1980 to 1988 but decreased to only 137,000 from 1990-1992 (Appendix C). Combining the highest aerial survey counts for each year in the three largest producers (Buskin, American and Olds) during the years 1980 to 1988 averaged a yearly combined count of over 200,000 pink salmon; this figure decreased to 85,000 during 1990-1992 (Appendix F). Similar to the decrease in the commercial harvest and escapements, the sport fish harvest also decreased. The 1985-1989 average pink salmon sport fish harvest along the Kodiak Road system was 10,700 but dropped to 7,000 in 1990-1992 (Table 14). The pink salmon harvest for the entire Kodiak management area in 1992 was 11,470 fish, or 58% of the 1985-1992 average (Table 14). In addition to these 14,470 harvested pink salmon, 29,500 pink salmon were released (Table 7).

Harvest estimates for the 1993 sport fishery are not available at this time but are expected to be very high. The 1993 pink salmon return was at record levels throughout the KMA. The commercial harvest in the Kodiak area of 34 million pink salmon was a record, tripling the average harvest. The majority of streams throughout the KMA received desired escapement levels. The 1993 pink salmon return ended 3 years of poor returns along the Kodiak road system. During the 1992 season, the bag limit was reduced along the Kodiak road system by emergency order to two fish per day and closed in the Buskin, American and Olds River. No restrictions were necessary in 1993.

Recent Board of Fisheries Actions

The last board action regarding pink salmon occurred in 1987 where the bag and possession limit for salmon (other than chinook) was reduced to 5 and 5 fish, respectively, for fish over 20 inches in length of which not more than 2 may be coho salmon and 2 may be sockeye salmon. The limits had previously been 6 daily, only 2 of which could be coho salmon, and 12 in possession, only 4 of which could be coho salmon.

Management Objectives

Management objectives for this fishery are to provide angling opportunities at a level commensurate with the ability of the fisheries resource to support. Even year minimum escapement goals for pink salmon have been established for the major streams producing pink salmon along the road system (Buskin 60,000; American 30,000; Olds 30,000). The sport fishery will be managed so that spawning escapements approximate minimum spawning escapements.

Current Issues

Pink salmon escapements to the Kodiak Road system commonly exceeded 500,000 fish during the 1980s (Appendix F). During this same period, sport fish harvests averaged about 12,000 fish, or about 2% of the total returns (Table 14). Under these conditions, manipulating the sport fish harvest would do little to effect achieving escapement goals. However, from 1990 to 1992 pink salmon returns along the road system were weak, and foregoing a sport harvest would add to the spawning escapement and reproductive potential of the stocks. The exceptionally poor return in 1992 prompted restrictions in the sport fishery. The record return in 1993 reversed the trend for poor returns. However, if 1994 is similar to the weak parent year (1992), then restrictions in the sport fishery will again be necessary.

Ongoing Research and Management Activities

No specific research or management activities are directed at this fishery. The weir on the Buskin River was not operated during the majority of the pink salmon return due to budgetary constraints. This will likely continue to be the case into the future. Historical time of entry data for the Buskin River are listed in Appendix G2. Aerial surveys have been utilized beginning in 1991 to estimate the pink salmon escapement in area streams and should be continued.

Outlook

The Division of Commercial Fisheries Management and Development conducts a research project in order to forecast the return of pink salmon. The forecasted commercial harvest is approximately 12 million fish which is average for an even year. Along the Kodiak road system, however, returns are expected to be below average. The Buskin River in particular is expected to have an exceptionally poor return. The poor escapement received in 1992 resulted in low egg deposition. When this stream was sampled, in addition to low numbers of emergent fry, many dead eggs were found. Egg mortality was attributed to freezing. Spring conditions were generally poor for emigrating fry survival. Survival in the American and Olds rivers was also below average but not as poor as the Buskin. Overall, a very poor return is expected along the Kodiak road system.

Inseason Management Approach

The magnitude of the pink salmon return to the Kodiak road system will be judged using comparative commercial catch statistics and aerial survey data. If it appears that the return is significantly below average and minimum escapement goals will not be met the sport fishery may be restricted.

A large increase in fishing effort was noted during the 1993 pink salmon season along the Olds River and Chiniak Creek. If these large increases in fishing effort are noted in 1994 and the run is determined to be weak, onsite observations should be made to determine if significant harvests are occurring as a result of the large fishing effort. If restrictions on the fishery are necessary to achieve minimum escapements, these restrictions should be initiated on or before August 10, the normal peak of the return. The options for restricting the fishery are numerous and include lowering the bag limit, closing specific waters or decreasing fishing time. The option selected will be the one that disrupts or limits sport fishing opportunity the least but adds fish to the spawning escapement.

It is recognized that the sport fishery generally does not greatly influence the reproductive potential of stock, largely because of the large spawning escapements involved and the relatively small sport harvests. For example, sport harvests during odd years on the Olds River have averaged approximately 1,000 fish. The minimum escapement goal for odd years on the Olds River is 60,000 fish. Even if spawning escapements were slightly below minimum, the sport removal of about 1,000 fish would not greatly impact the stock's ability to produce an abundant return. For this reason, the sport fishery will not be restricted unless it appears that spawning escapement will not be reached by a significant amount.

Recommended Research and Management Activities

No additional research or management activities are recommended for this fishery at present. At this time, no changes in regulation are recommended with respect to this fishery.

Table 14. Harvest of pink salmon from Kodiak Road System waters of the Kodiak Management Area, 1985-1992.

| Year | KMA Harvest | Kodiak Road System | | | |
|---|---|---|---|---|---|
| | | Freshwater | Saltwater | Total | % of KMA |
| 1985 | 15,426 | 6,455 | 2,930 | 9,385 | 60.8 |
| 1986 | 17,365 | 8,594 | 3,699 | 12,293 | 70.8 |
| 1987 | 13,532 | 6,157 | 4,710 | 10,867 | 80.3 |
| 1988 | 31,296 | 8,968 | 7,638 | 16,606 | 53.1 |
| 1989 | 29,176 | 9,820 | 5,269 | 15,089 | 51.7 |
| 1990 | 29,997 | 4,841 | 1,695 | 6,536 | 21.8 |
| 1991 | 12,106 | 5,930 | 4,313 | 10,243 | 84.6 |
| 1992 | 11,473 | 3,031 | 1,345 | 4,376 | 38.1 |
| MEAN | 20,046 | 6,724 | 3,950 | 10,674 | 57.6 |

Table 15. Harvest of pink salmon from selected Kodiak Road System streams, 1977-1992.

| Year | Buskin River | Pasagshak River | American River | Olds River | Total |
|---|---|---|---|---|---|
| 1977 | 3,868 | 1,423 | | | 5,291 |
| 1978 | 4,752 | 1,006 | | | 5,758 |
| 1979 | 4,036 | 1,173 | | | 5,209 |
| 1980 | 6,122 | 1,731 | | | 7,853 |
| 1981 | 3,856 | 713 | | | 4,569 |
| 1982 | 7,357 | 94 | | | 7,451 |
| 1983 | 4,196 | 178 | 430 | 199 | 5,003 |
| 1984 | 4,701 | 499 | 835 | 611 | 6,646 |
| 1985 | 3,812 | 501 | 380 | 440 | 5,133 |
| 1986 | 5,810 | 321 | 948 | 1,086 | 8,165 |
| 1987 | 2,354 | 706 | 1,729 | 1,105 | 5,904 |
| 1988 | 5,202 | 327 | 1,310 | 982 | 7,821 |
| 1989 | 4,402 | 804 | 1,397 | 2,325 | 8,928 |
| 1990 | 2,841 | 183 | 1,000 | 488 | 4,512 |
| 1991 | 1,942 | 601 | 1,472 | 1,246 | 5,261 |
| 1992 | 1,557 | 403 | 513 | 476 | 2,949 |
| MEAN (85-92) | 3,490 | 480 | 1,093 | 1,019 | 6,084 |

## Kodiak Road System Coho Salmon Fishery

### Historical Perspective

Wild and stocked coho salmon return to Kodiak Road System streams from late August through October. Peak immigration typically occurs during mid-September. Spawning occurs in stream reaches both upstream and downstream of road system bridges beginning in October.

Beginning in 1984, anadromous coho salmon fingerlings have been stocked into seven different Kodiak Road System drainages. Returns from these stocking efforts have established major sport fisheries in several locations along the Kodiak Road System. The largest fisheries occur at Mill Bay, Mission and Kalsin beaches. Fisheries for stocked returns also occur at Mayflower and Russian River beaches. These releases have averaged 60,998 fingerlings from 1988 through 1993 (Table 9).

The intertidal reach of the Buskin River, considered to be the area downstream of Bridge No. 1, is open to the taking of salmon (other than chinook) year-round. The Buskin River upstream of Bridge No. 1 is closed to fishing for all salmon from August 1 through September 10. The remaining streams along the Kodiak Road System which flow into Monashka and Chiniak bays are open to salmon (other than chinook) fishing year-round in the reaches downstream of the highway bridges, and closed from August 1 through September 10 in reaches upstream of the highway bridges. The bag and possession limit is 5 salmon 20 inches or more in length, of which no more than 2 may be coho or sockeye salmon.

From 1985 through 1992, the average harvest of coho salmon from waters of the Kodiak Road System has been 11,280, accounting for an average of 56% of the total KMA coho salmon harvest over this period (Table 16). About 70% of the Kodiak road system harvest has been from the Buskin, Pasagshak, Olds, and American rivers (Tables 16 and 17). Of these systems, the Buskin and Pasagshak rivers have supported the largest fisheries for coho salmon. Since 1985, the average harvest of coho salmon from the Buskin and Pasagshak rivers has been 3,240 and 2,320 fish, respectively (Table 17). Other significant fisheries for coho salmon in this area occur along the shorelines and marine waters of Chiniak and Ugak bays.

### Recent Fishery Performance

By regulation, coho salmon fishing in streams flowing into Monashka and Chiniak bays was confined to waters below the road system bridges and below Bridge #1 on the Buskin River from August 1 through September 10. During the 1993 season as the September 10 regulatory opening date for waters upstream of the highway bridges approached, attempts were made to insure that the coho salmon run was strong enough to sustain the increased effort from upstream areas directed at the stocks and still assure that escapement goals could be achieved. As in the past, the main indicator stream for Chiniak and Monashka Bay coho salmon stocks remained the Buskin River. Over the 9 years of operation of the Buskin River weir (1985-1993), coho salmon escapements have averaged about 8,410 fish through October 1 (Table 18). A formal escapement goal defined in terms of how many coho salmon are needed for spawning in order to assure maximum propagation of future runs has not been established.

However, an interim range of 5,300 to 8,300 is currently used. Information from creel surveys indicated approximately 20% of Buskin harvest occurs above the weir, 700 coho on an average year. In order to achieve the minimum number of desired spawners, 5,300, an inriver goal of 6,000 fish is needed in order to allow for a sport fish harvest above the weir. Using the average time of entry for coho salmon stocks into the Buskin River, an average of about 29% of the coho salmon escapement has gone through the weir by September 7 (Appendix G3). If the 1993 run had a normal time of entry pattern, an escapement of about 1,700 coho salmon would have been required to have passed through the weir by September 7 to achieve an average escapement of 6,000 coho salmon by October 1. The actual escapement during 1993 on September 7 was 1,700 coho salmon, and as a result the waters upstream of the Chiniak Highway opened as scheduled on September 11. Sport harvests of coho along the road system are not available for 1993 yet. Coho harvests should be about average based on the size of the return (Table 18, Appendix E). The 1993 coho return was much stronger than the 1992 return when waters above the Chiniak Highway remained closed until October 7 to ensure minimum escapements. The coho harvest along the Kodiak road system in 1992 of 7,680 fish was the lowest since 1985 and significantly below the average of 11,300 (Table 16).

Management Objectives

Management objectives for this fishery are to provide angling opportunities at a level commensurate with the ability of the fisheries resource to support. The fishery will be managed so that a minimum spawning escapement of 5,300 coho will be achieved in the Buskin River. The fishery will also be managed so that other coho systems along the road continue to receive sufficient spawning escapements (American, Olds, Salonie, Roslyn, Pasagshak).

Recent Board of Fisheries Actions

The most recent regulation concerning coho salmon was adopted by the Alaska Board of Fisheries during their 1987 meeting and reduced the bag and possession limit for salmon on the Kodiak road system (other than chinook) to 5 fish for fish over 20 inches in length of which not more than 2 may be coho salmon and 2 may be sockeye salmon. The limits had previously been 6 daily, only 2 of which could be coho salmon, and 12 in possession, only 4 of which could be coho salmon.

Current Issues

Based on informal angler interviews, it appears that the recreational fishery for coho salmon in the Kodiak Road System is the most important sport fishery in the Kodiak Management Area in terms of angler preference. The sport fishery harvests the majority of the return (11,286, Table 16) followed by the commercial fishery (7,350, Appendix C) and the subsistence fishery (2,700, Appendix D). Due to its proximity to the town of Kodiak and high angler interest, the sport fishery has the potential to overharvest the coho resource. In order to document what has occurred with the road system coho stocks so that these populations and fisheries can be studied and managed, a report was compiled (Schwarz 1993). In this report, harvest from all fisheries, run timing, escapement and stocking statistics for the years 1980-1990 are compiled.

During the 1993 season, crowding became a major social issue. Main locations of concern were Chiniak Creek (during the pink return) and the Olds River. Fishing effort levels increased dramatically when a local church began facilitating regular fishing outings for church members residing off Kodiak Island. The Division of Sport Fish implemented a voluntary log book program with the major user as well as sporadic onsight creel survey to ensure the increase in fishing effort did not result in an overharvest of the resource. Department personnel observed as many as 278 anglers fishing at the mouth of the Olds River at one time. During the coho run the Olds River normally has 15 to 20 anglers fishing during the morning or evening. Harvests average about 40 fish per day during a normal return. During the 1993 season this increase in fishing effort did not result in an increase in harvest so restrictions were not placed on the fishery, and escapement objectives in the Olds River were met. In the future, if harvest rates increase, the fishery may need to be restricted to ensure escapement objectives are achieved.

Ongoing Research and Management Activities

A weir on the Buskin River and foot/aerial surveys on other area streams are currently used to estimate escapement levels. During the 1993 season a log book program and sporadic creel survey was used on the Olds River to document a large increase in fishing effort as well as associated harvest.

Inseason Management Approach

During the 1970s, pink salmon stocks on the Kodiak road system were rebuilding, and waters above the Chiniak Highway were closed by regulation to salmon fishing from August 1 through September 10 in order to protect spawning pink salmon. This regulation also provides a sanctuary for coho salmon which migrate upstream during this period. If the coho return appears below average in strength, the first fishery restriction has been to extend the closure of waters above the Chiniak Highway to salmon fishing.

The Buskin River is the largest producer of coho salmon on the Kodiak road system and is used as an indicator of coho run strength in Chiniak Bay. A weir is maintained on the Buskin River, and average time of entry data is available (Appendix G3). Under normal run timing, 38% of the escapement has occurred by September 10. This means that to achieve a minimum inriver escapement of 6,000 coho by October 1, approximately 2,160 fish should be through the weir by September 10. If an inriver goal of 6,000 coho is achieved a spawning goal of 5,300 is also achieved based on average sport fish harvest statistics. River water levels can slow immigration, and this should also be considered when evaluating weir counts to gauge run strength. If the return is judged to be below average to the point that minimum escapement levels may not be reached, then the closure of waters above the Chiniak Highway is extended. If the upriver closure is not sufficient to ensure minimum escapements are achieved then additional restrictions may be implemented (reduction in bag limits, additional area closures, or time closures).

Recommended Research and Management Activities

Maintaining operation of the Buskin River weir in order to gauge run strength of the Chiniak Bay coho run is essential. This management tool allows for

conservation of the resource as well as providing maximum fishing opportunities to anglers.

In addition to the Buskin River there are many smaller streams which provide fishing opportunities on the Kodiak road system: Monashka, Pillar, Sargent, Russian, Salonie, American, Olds, Roslyn, Chiniak, Pasagshak, Saltery and Miam. The only way to evaluate whether the existing management system is effectively providing for stock conservation is to monitor escapement levels in these streams annually. Although escapement surveys are conducted after all fisheries have taken place, they still provide the data necessary to observe trends. If decreasing trends were noted over 2 or 3 years then the management strategy could be adjusted to better provide for stock conservation. Without documenting escapement after the fisheries have occurred it is difficult to evaluate management strategies. It is recommended that the above mentioned streams be walked at least once to document spawning escapement. The six largest streams should be walked twice. Results of these surveys are listed in Appendix E.

If the significant increase in fishing effort noted in 1993 reoccurs in 1994, it will be necessary to again implement a spot check creel survey to ensure catch rates do not impact spawning escapements. As fishing effort for coho salmon along the road system continues to increase the stocking program will increase in importance. This project provides additional fishing opportunities as well as relieving fishing pressure on the wild stocks. The 1992 statewide harvest survey documented a harvest of 600 coho with 1,300 angler days at Mill Bay, a return location for stocked adults. The 1993 harvest of stocked coho along Mission Beach was probably at record levels, although fisheries statistics for this fishery have not been collected. The presence of up to several hundred anglers fishing daily in town and successfully harvesting fish attested that an above average return occurred. In 1993, brood source eggs were taken from the Buskin River instead of from Afognak. The change in this program was initiated over concerns that returning adults would stray into local streams and genetically mix with wild stocks. The change in the project now requires sport fish staff to be involved with an egg take and outstocking. Total involvement is probably less than 1 week for staff. The Kodiak Regional Aquaculture Association is incubating and rearing those eggs free of charge at the Pillar Creek fish hatchery. The involvement in this project for the return of angling opportunity is cost effective and should be continued.

Table 16. Harvest of coho salmon from Kodiak Road System waters of the Kodiak Management Area, 1985-1992.

| Year | KMA Harvest | Kodiak Road System | |
|---|---|---|---|
| | | Harvest | % of KMA |
| 1985 | 8,727 | 8,130 | 54.1 |
| 1986 | 20,479 | 14,007 | 55.0 |
| 1987 | 17,355 | 11,500 | 59.3 |
| 1988 | 18,298 | 13,475 | 63.0 |
| 1989 | 20,176 | 14,910 | 62.9 |
| 1990 | 20,065 | 8,364 | 41.7 |
| 1991 | 17,691 | 12,147 | 68.9 |
| 1992 | 16,920 | 7,676 | 45.4 |
| MEAN | 17,464 | 11,276 | 56.4 |

Table 17. Harvest of coho salmon from selected Kodiak Road System streams, 1977-1992.

| Year | Buskin River | Pasagshak River | American River | Olds River | Total |
|---|---|---|---|---|---|
| 1977 | 890 | 1,169 | | | 2,059 |
| 1978 | 1,018 | 1,043 | | | 2,061 |
| 1979 | 2,870 | 2,409 | | | 5,279 |
| 1980 | 2,643 | 2,480 | | | 5,123 |
| 1981 | 2,269 | 1,015 | | | 3,284 |
| 1982 | 2,431 | 1,100 | | | 3,531 |
| 1983 | 2,307 | 1,322 | 378 | 31 | 4,038 |
| 1984 | 1,871 | 1,646 | 486 | 561 | 6,140 |
| 1985 | 2,937 | 2,292 | 349 | 562 | 6,142 |
| 1986 | 4,251 | 2,951 | 826 | 1,651 | 9,679 |
| 1987 | 3,133 | 3,477 | 435 | 235 | 7,280 |
| 1988 | 3,474 | 2,637 | 1,710 | 1,273 | 9,094 |
| 1989 | 4,984 | 2,100 | 1,500 | 2,571 | 11,155 |
| 1990 | 1,521 | 2,105 | 849 | 948 | 5,423 |
| 1991 | 4,121 | 1,296 | 722 | 1,778 | 7,917 |
| 1992 | 1,474 | 1,733 | 583 | 1,085 | 4,875 |
| MEAN (85-91) | 3,237 | 2,324 | 872 | 1,263 | 7,696 |

Table 18. Numbers of anadromous fish passed through the Buskin River weir, 1985-1993.

| Year | Dolly Varden Emigration | Steelhead Kelts[a] | Sockeye Salmon | Pink Salmon[b] | Dolly Varden Immigration | Coho Salmon[c] | Chum Salmon | Chinook |
|---|---|---|---|---|---|---|---|---|
| 1985 | 21,797 | 223 | 18,010 | 153,026 | 20,540 | 9,474 | 7 | |
| 1986 | 41,659 | 71 | 8,939 | 98,958 | 24,110 | 9,939 | 51 | |
| 1987 | 29,919 | 105 | 12,690 | 27,892 | 32,848 | 11,103[d] | 79 | |
| 1988 | 30,336 | 357 | 12,144 | 203,578 | 34,386 | 6,782[d] | 84 | |
| 1989 | 35,603 | 205 | 17,853 | 159,123 | 33,306 | 9,930[d] | 79 | |
| 1990 | 91,107[e] | 150[f] | 10,528[g] | 42,889 | 6,416[h] | 6,222 | 18 | |
| 1991 | 30,725[e] | 148[f] | 9,789 | 37,636[i] | 812[i] | 8,929 | 21 | |
| 1992 | 74,451[e] | 201[f] | 9,782 | 25,141[i] | 868[i] | 6,535 | 9 | 6 |
| 1993 | 140[j] | 13[j] | 9,526 | 53,484[i] | 4,960[i] | 6,813 | 22 | 8 |

[a] Steelhead kelts are fish which have overwintered in the lake, spawned in the river during the spring, and are returning to the sea.

[b] Does not include an estimated 18,000, 12,000, 2,500, 30,000, 28,000, and 11,563 pink salmon spawning below the weir in 1985, 1986, 1987, 1988, 1989, and 1990, respectively.

[c] A total of 350, 400, and 600 coho were estimated below the weir when it was removed in 1986, 1987, and 1988, respectively.

[d] The 1987 return of coho was enhanced by the stocking of 40,000 fry in 1984, the 1988 return by the stocking of 44,000 fry in 1985, and the 1989 return by the stocking of 50,000 fry in 1986.

[e] A small vexar mesh was placed over the weir in order to obtain a complete count during 1990, 1991, and 1992. Prior to 1990 only fish greater than 300 mm were effectively counted. Starting in 1990 the weir was moved to the outlet of Buskin Lake.

[f] The weir was moved to Buskin Lake outlet. These steelhead were not kelts but pre-spawning ripe fish.

[g] From 1990 to 1993 the weir was moved upriver to the outlet of Buskin Lake. Sockeye entering the tributary lakes of Louise and Genevieve are not counted at the upriver location.

[h] A flood during peak immigration made it impossible to estimate migration. This figure is a partial count.

[i] The weir was not operated during late July and early August. Dolly Varden counts are incomplete and pink counts have been expanded by aerial surveys or time of entry data in order to estimate escapement.

[j] The weir was not operated in April and May. These counts are incomplete and have not been expanded to estimate total escapement.

## Kodiak Road System Sockeye Salmon Fishery

### Historical Perspective

Three sockeye salmon populations are present on the Kodiak Road system: the Buskin, Pasagshak, and Saltery populations. Sockeye salmon return to Kodiak Road system lakes from June through August with peak immigration varying by stream. Saltery supports the latest returning sockeye salmon run on the road system. Because of the limited access into Saltery Cove (4 wheel drive only) the Buskin and Pasagshak receive most of the fishing effort. Spawning occurs in mid August.

The intertidal reach of the Buskin River, considered to be the area downstream of Bridge No. 1, is open to the taking of salmon (other than chinook) year-round. The Buskin River upstream of Bridge No. 1 is closed to fishing for salmon from August 1 through September 10. The remaining streams along the Kodiak Road System which flow into Monashka and Chiniak bays are open to salmon fishing year-round in the reaches downstream of the highway bridges, and closed from August 1 through September 10 in reaches upstream of the highway bridges. The bag and possession limit is 5 salmon 20 inches or more in length, of which no more than 2 may be sockeye salmon.

From 1985 through 1992, the average harvest of sockeye salmon from waters of the Kodiak Road system has been 3,360, accounting for an average of 43% of the total KMA sockeye salmon harvest over this period (Table 19). About 79% of the road system harvest has been from the Buskin and Pasagshak rivers (Table 20). Since 1985, the average harvest of sockeye salmon from these two river systems has been 2,000 and 670 fish, respectively (Table 20). Another significant fishery for sockeye salmon in this area occurs in Saltery River.

### Recent Fishery Performance

The sport harvest of sockeye salmon from Kodiak Road System waters during 1992 (3,140) was about average (Table 19). This harvest accounted for 37% of the total sockeye salmon harvest from KMA waters during 1992 (Table 19). As was the case in the past, the Buskin and Pasagshak rivers supported the largest harvest of sockeye salmon (Table 20).

During 1993, sockeye salmon returns were average in the Buskin and Pasagshak but at record levels in Saltery River (Appendix F). Although harvest and catch estimates are not yet available for 1993, they are expected to be average to slightly above average.

### Management Objectives

Management objectives for this fishery are to provide angling opportunities at a level commensurate with the ability of the fishery resource to support. The Buskin River fishery will be managed so that a minimum spawning escapement of 8,000 fish is achieved in Buskin Lake. Escapement trends will be monitored in Pasagshak and Saltery lakes through aerial surveys, to ensure that escapement into these lakes is being met.

Recent Board of Fisheries Actions

The most recent regulation affecting sockeye salmon occurred in 1987 when the Alaska Board of Fisheries reduced the bag and possession limit for salmon (other than chinook) to 5 and 5 fish, respectively, for fish over 20 inches in length of which not more than 2 may be coho salmon and 2 may be sockeye salmon. The limits had previously been 6 daily, only 2 of which could be coho salmon, and 12 in possession, only 4 of which could be coho salmon.

Current Issues

Due to its proximity to the town of Kodiak, the Buskin River sockeye salmon resource receives considerable sport and subsistence fishing pressure. The subsistence fishery is the major user with harvests averaging 4,100 sockeye salmon from 1980-1992 (Appendix D). Over this same period, the average sport harvest of sockeye salmon from the Buskin River has been 2,000. There is no directed commercial fishery on the Buskin River sockeye salmon stocks. The average commercial harvest in Womens Bay during nondirected commercial fisheries from 1980-1992 has been 100 sockeye (Appendix C). Since 1985, the average escapement of sockeye salmon to the Buskin River weir has been 12,150 (Table 18). Current exploitation rates appear to be sustainable. However, escapement must be monitored to ensure that the reproductive potential of the stock is not diminished as user group demands increase.

Ongoing Research and Management Activities

A weir is currently operated on the Buskin River to count immigrating sockeye salmon. Scale samples are being collected from the escapement as well as from the subsistence harvest so that brood year tables can be constructed and escapement goals evaluated. Currently subsistence harvests are tabulated from returned permits. An attempt will be made to expand these reported harvests to an estimated total harvest by interviewing people who did not return their permits.

Inseason Management Approach

A biological minimum escapement goal of 8,000 sockeye is currently under review for formal adoption and in the interim is being used to manage the fishery. Since 1985, sockeye have been enumerated through a weir on the Buskin River and time of entry data are available for this period (Appendix G1). If escapement counts through the weir drop to a point where a minimum escapement of 8,000 sockeye cannot be assured, then the sport fishery will be restricted. Restrictions could consist of reducing the bag limit or closing specific areas or times, depending on how much the sport harvest needed to be reduced to achieve the minimum spawning objective.

Recommended Research and Management Activities

Staff recommends continued operation of the weir on the Buskin River to count immigrating sockeye salmon. Also, biological sampling of the escapement and subsistence harvest should be continued so that brood tables can be constructed.

Table 19. Harvest of sockeye salmon from Kodiak Road System waters of the Kodiak Management Area, 1985-1992.

| Year | KMA Harvest | Kodiak Road System | |
|---|---|---|---|
| | | Harvest | % of KMA |
| 1985 | 8,225 | 3,832 | 46 |
| 1986 | 6,233 | 3,424 | 54 |
| 1987 | 4,562 | 2,590 | 56 |
| 1988 | 8,853 | 4,166 | 47 |
| 1989 | 13,173 | 4,004 | 30 |
| 1990 | 8,224 | 2,901 | 35 |
| 1991 | 5,049 | 2,814 | 55 |
| 1992 | 8,408 | 3,140 | 37 |
| MEAN | 7,841 | 3,359 | 43 |

Table 20. Harvest of sockeye salmon from selected Kodiak Road System streams, 1977-1992.

| Year | Buskin River | Pasagshak River | Total | % of Road System |
|---|---|---|---|---|
| 1977 | 228 | 176 | 404 | |
| 1978 | 493 | 85 | 578 | |
| 1979 | 424 | 236 | 660 | |
| 1980 | 388 | 284 | 672 | |
| 1981 | 173 | 205 | 378 | |
| 1982 | 304 | 199 | 503 | |
| 1983 | 1,233 | 192 | 1,425 | |
| 1984 | 1,179 | 374 | 1,571 | |
| 1985 | 3,484 | 182 | 3,666 | 96 |
| 1986 | 2,339 | 428 | 2,767 | 81 |
| 1987 | 1,503 | 417 | 1,920 | 74 |
| 1988 | 2,274 | 819 | 3,093 | 74 |
| 1989 | 1,816 | 1,244 | 3,060 | 76 |
| 1990 | 998 | 1,018 | 2,016 | 70 |
| 1991 | 1,575 | 815 | 2,390 | 85 |
| 1992 | 1,981 | 427 | 2,408 | 77 |
| MEAN (85-91) | 1,996 | 669 | 2,664 | 79 |

## Kodiak Road System Landlocked Lakes Stocked Fisheries

### Historical Perspective

Stocking has and is currently being used to increase and diversify the opportunities for sport anglers fishing Kodiak Road System landlocked lakes. Several species of fish at various life stages have been stocked including rainbow trout fingerlings, Arctic grayling fry, and coho salmon fingerling.

Regulations governing the stocked lakes vary by species. Within the Kodiak Road System, with the exception of the Saltery and Buskin Lake drainages, populations of rainbow trout are limited to hatchery produced fish planted into landlocked lakes; the bag and possession for rainbow trout is 10 fish, only 1 of which may be 20 inches or more in length. Daily bag and possession limits for Arctic grayling are 10 fish with no size limits. Bag and possession limits for salmon other than chinook are 10 per day, 10 in possession for fish less than 20 inches.

From 1984 through 1992, an average of 1,540 angler-days have been expended by recreational anglers fishing landlocked lakes along the Kodiak Road System (Table 21). This effort has represented on average only about 1% (Table 21) of the total sport fishing effort expended by recreational anglers fishing KMA waters over this period (Mills 1993). The average harvest of rainbow trout, Arctic grayling, and nonanadromous salmon from stocked lakes from 1984 through 1992 has totaled 870, 150, and 260 fish, respectively (Table 21). Road system harvests have represented nearly half of the harvests of rainbow trout and Arctic grayling and 23% of the harvests of all of the landlocked salmon from KMA waters over this period (Table 21).

During 1992, approximately 123,700 fry and fingerlings were stocked into landlocked lakes of the KMA (Table 9).

### Management Objectives

The management objectives for this fishery are to provide angling opportunities and diversity through a landlocked lake stocking project.

### Recent Board of Fisheries Actions

The Board of Fisheries has taken no specific actions with respect to this fishery in recent years.

### Current Issues

Although over 150,000 rainbow trout, Arctic grayling, and nonanadromous salmon have been stocked along the Kodiak Road system in recent years, effort directed towards these stocked fish and harvest of the stocked fish has remained relatively low (Table 21). There are no other major management issues regarding this fishery at present.

### Ongoing Research and Management Activities

There are no major research or management activities regarding this fishery ongoing at present.

Recommended Research and Management Activities

Greater education of the sportfishing public is recommended to increase utilization of these stocked fish. No other specific research or management activities are recommended for this fishery at present.

Table 21. Number of angler-days of sport fishing effort and number of rainbow trout, Arctic grayling, and landlocked salmon harvested by anglers fishing roadside lakes along Kodiak Road System, 1984-1992.

| | Effort (Angler-Days) | | | Rainbow Trout Harvest | | | Arctic Grayling Harvest | | | Landlocked Salmon Harvest | | |
|---|---|---|---|---|---|---|---|---|---|---|---|---|
| Year | Lakes | KMA | % of KMA | Lakes | KMA | % of KMA | Lakes | KMA | % of KMA | Lakes | KMA | % of KMA |
| 1984 | 2,442 | 101,126 | 2 | 1,446 | 2,828 | 51 | 249 | 361 | 69 | 1,547 | 1,547 | 100 |
| 1985 | 1,532 | 97,893 | 2 | 1,173 | 3,119 | 36 | 516 | 870 | 59 | 106 | 889 | 12 |
| 1986 | 582 | 98,893 | 1 | 367 | 928 | 40 | 15 | 15 | 100 | 0 | 726 | |
| 1987 | 1,390 | 98,969 | 1 | 1,394 | 1,849 | 75 | 72 | 594 | 12 | 434 | 1,116 | 39 |
| 1988 | 1,646 | 91,631 | 2 | 490 | 964 | 51 | 109 | 382 | 29 | 0 | 18 | |
| 1989 | 969 | 111,048 | 1 | 787 | 1,861 | 42 | 189 | 726 | 26 | 60 | 1,587 | |
| 1990 | 1,475 | 116,197 | 1 | 812 | 1,528 | 53 | 52 | 86 | 61 | 35 | 1,330 | 2 |
| 1991 | 1,541 | 137,304 | 1 | 472 | 1,296 | 36 | 65 | 98 | 66 | 0 | 0 | |
| 1992 | 2,261 | 107,482 | 2 | 901 | 1,195 | 75 | 120 | 120 | 100 | 151 | 887 | 17 |
| MEAN | 1,537 | 106,726 | 1 | 872 | 1,730 | 51 | 154 | 362 | 58 | 259 | 899 | 23 |

## ADAK ISLAND FISHERIES

Adak Island is situated approximately mid-way on the Aleutian Island chain (Figure 7). The community of Adak and a large US Naval Base on the island are the major population centers. All fisheries on the island can be accessed either by road or small boat launched from the community of Adak.

The marine and fresh waters of Adak Island support the second most popular fisheries in the KMA in terms of recreational angling effort expended since 1985 (Figure 2). Since 1985, these waters have accounted for nearly 15% of the recreational angling effort expended in the KMA.

There are two major fisheries that occur in the waters of Adak Island. These fisheries target Dolly Varden and Pacific salmon. In terms of numbers of fish harvested, the leading fisheries are those that target Dolly Varden; however, in terms of angler preference the most popular fisheries are those that target salmon.

### Adak Island Dolly Varden Fishery

#### Historical Perspective

Dolly Varden are available to anglers in a number of Adak Island streams throughout the year. Peak abundance, however, typically occurs in May and July through September. All streams on Adak Island are open year-long to fishing for Dolly Varden and the daily bag and possession limit is 10 Dolly Varden with no size limit.

From 1982 through 1992, the Dolly Varden stocks of Adak Island have supported an average harvest of 3,228 Dolly Varden, accounting for an average of 14% of the total KMA Dolly Varden harvest over this period (Table 22). Several streams and nearshore marine waters on Adak Island support sport fisheries for Dolly Varden.

#### Recent Fishery Performance

The sport harvest of Dolly Varden from Adak Island waters during 1992 (2,010) was below the 11-year mean (3,230). In addition to the harvest of 2,010 Dolly Varden from Adak Island waters during 1992, an additional 8,850 Dolly Varden were estimated to have been caught and released by sport anglers fishing Adak Island waters during 1992 (Mills 1993). Based on this, anglers released an estimated 82% of the Dolly Varden they caught fishing Adak Island waters during 1992.

No estimates of catch or harvest of Dolly Varden are available for this fishery during 1993 at this date.

#### Recent Board of Fisheries Actions

The most recent regulation affecting Dolly Varden on Adak occurred during the 1987 Alaska Board of Fishery meeting, when the bag and possession limit for Dolly Varden was reduced from 20 to 10 fish daily and in possession. This

change did not reduce the number of Dolly Varden harvested from Adak area waters.

Current Issues

There are no current biological or social issues associated with this fishery at present.

Ongoing Research and Management Activities

There are no specific research or management activities directed at this fishery at present.

Recommended Research and Management Activities

No specific research or management activities are recommended for this fishery at present. At this time, no changes in regulation are recommended with respect to this fishery.

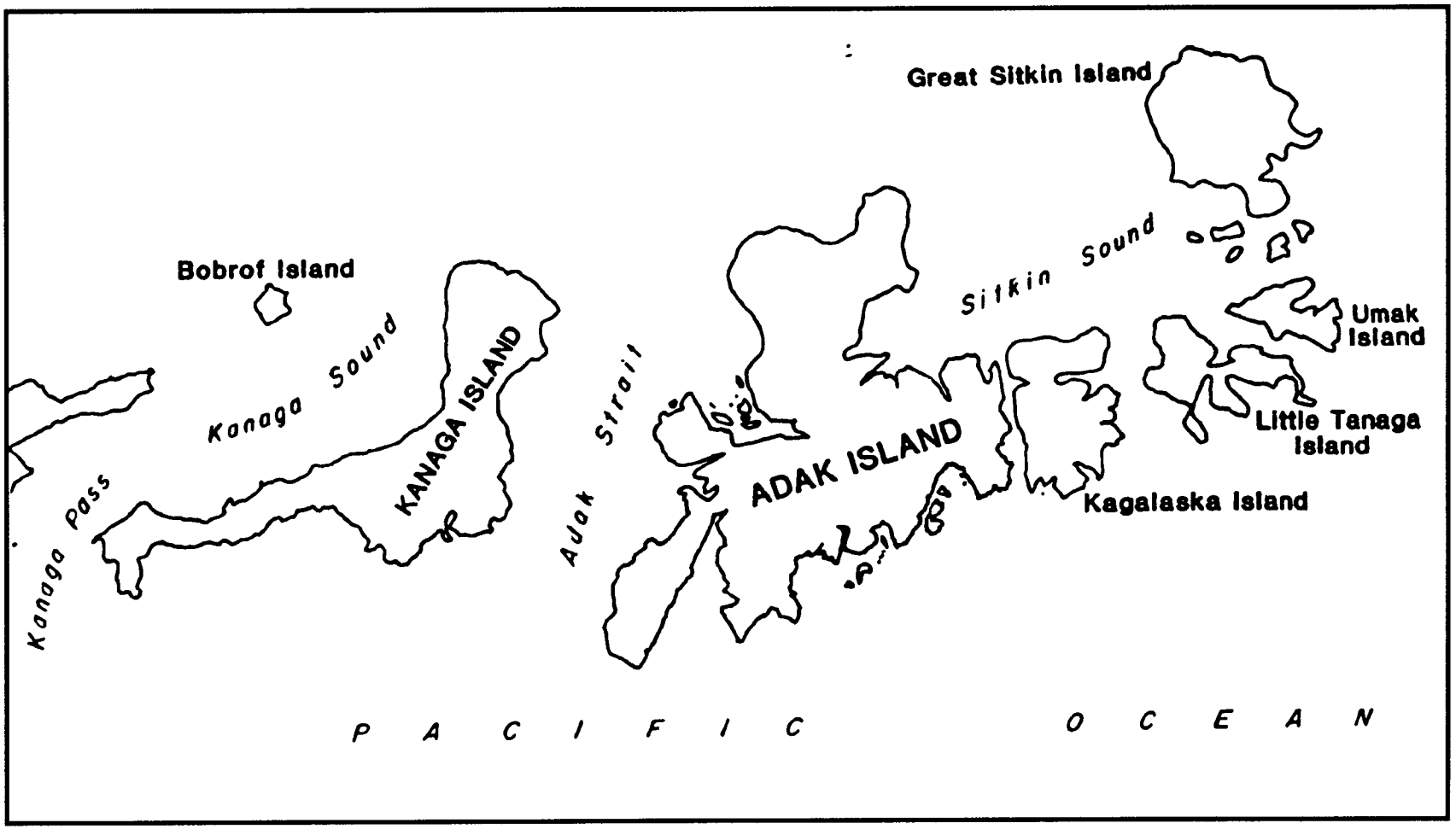


Figure 7. Adak Island and surrounding waters.

Table 22. Harvest of Dolly Varden from Adak Island waters of the Kodiak Management Area, 1982-1992.

| Year | KMA Harvest | Adak Island | |
|---|---|---|---|
| | | Harvest | % of KMA |
| 1982 | 36,065 | 3,365 | 9 |
| 1983 | 30,192 | 4,374 | 15 |
| 1984 | 28,528 | 3,254 | 11 |
| 1985 | 22,562 | 2,653 | 12 |
| 1986 | 26,459 | 2,819 | 11 |
| 1987 | 15,831 | 3,631 | 23 |
| 1988 | 22,592 | 1,237 | 6 |
| 1989 | 18,635 | 3,137 | 17 |
| 1990 | 21,052 | 5,591 | 27 |
| 1991 | 21,418 | 3,036 | 14 |
| 1992 | 11,525 | 2,007 | 17 |
| MEAN | 23,169 | 3,228 | 14 |

## Adak Island Salmon Fisheries

### Historical Perspective

Pink salmon return to several Adak Island streams from mid-July through early September. Peak pink salmon immigration occurs during the second week of August with spawning typically beginning in mid August. Coho salmon return to Adak Island streams from late August through mid October. Peak coho salmon immigration occurs during September with spawning typically beginning in early October. Sockeye salmon return to a number of Adak Island streams from June through August. Peak sockeye salmon immigration varies by stream but typically occurs during late June to early July. Spawning occurs in streams beginning in July.

From 1982 through 1992, the pink salmon stocks of Adak Island have supported an average harvest of 6,390 pink salmon, accounting for an average of 28% of the total KMA pink salmon harvest over this period (Table 23). Several streams on Adak Island and nearshore marine waters support sport fisheries for pink salmon. Pink salmon returning to Adak Island streams are also harvested in subsistence fisheries. From 1985 through 1992, the coho salmon stocks of Adak Island have supported an average sport harvest of 1,270 coho salmon, accounting for an average of 8% of the total KMA coho salmon harvest over this period (Table 23). Over this same period, the sockeye salmon stocks of Adak Island have supported an average harvest of 1,200 sockeye salmon, accounting for an average of 13% of the total KMA sockeye salmon harvest over this period (Table 23). Several streams on Adak Island support sport fisheries for sockeye salmon.

Commercial fisheries targeting salmon have not occurred in the Aleutian Islands west of Unalaska Island with exception of the Atka/Amlia experimental fishery. The Board of Fisheries created a commercial fishery for a 3-year duration beginning in 1992 after which it would be reviewed for renewal. During 1989 the Alaska Board of Fisheries revoked the subsistence fishery on Adak Island and established a personal use fishery. Since 1989, about 60 people have obtained personal use permits annually. Annual salmon harvests in this fishery have ranged between 400-800 sockeye salmon, 40-150 pink salmon, and 20-50 coho salmon.

### Recent Fishery Performance

The sport harvest of pink salmon from Adak Island waters during 1992 (4,410) was about 2,000 fish below average (Table 23). This harvest accounted for 28% of the total pink salmon harvest from KMA waters during 1992. In addition to the harvest of 4,410 pink salmon from Adak Island waters during 1992, an additional 4,300 pink salmon were estimated to have been caught and released by sport anglers fishing Adak Island waters during 1992 (Mills 1993). Based on this, anglers released an estimated 49% of the pink salmon they caught fishing Adak Island waters during 1992.

The sport harvest of coho salmon from Adak Island waters during 1992 (570) was below average (Table 23). This harvest accounted for 3% of the total coho salmon harvest from KMA waters during 1992. In addition to the harvest of 570 coho salmon from Adak Island waters during 1992, an additional 330 coho salmon were estimated to have been caught and released by sport anglers fishing Adak

Island waters during 1992 (Mills 1993). Based on this, anglers released an estimated 38% of the coho salmon they caught fishing Adak Island waters during 1992.

The sport harvest of sockeye salmon from Adak Island waters during 1992 (650) was also below average. This harvest accounted for 8% of the total sockeye salmon harvest from KMA waters during 1992. Anglers released 550 or 46% of the sockeye salmon they caught.

Recent Board of Fisheries Actions

There have been no specific actions taken by the Board of Fisheries in recent years regarding this fishery.

Current Issues

Adak Island is very remote and department personnel do not regularly monitor fisheries on the island. However, there appears to be no major biological or social issues associated with this fishery at present.

Ongoing Research and Management Activities

There are no specific research or management activities directed at this fishery at present.

Recommended Research and Management Activities

No specific research or management activities are recommended for this fishery at present. At this time, no changes in regulation are recommended with respect to this fishery.

Table 23. Harvest of pink, coho, and sockeye salmon from Adak Island waters of the Kodiak Management Area, 1982-1992.

| | Pink Salmon | | | | Coho Salmon | | Sockeye Salmon | |
|---|---|---|---|---|---|---|---|---|
| Year | Freshwater | Saltwater | Total | % of KMA | Harvest | % of KMA | Harvest | % of KMA |
| 1982 | 2,170 | 6,571 | 8,741 | 29 | | | | |
| 1983 | 713 | 1,783 | 2,496 | 19 | | | | |
| 1984 | 304 | 3,786 | 4,090 | 24 | | | | |
| 1985 | 1,907 | 0 | 1,907 | 12 | 311 | 4 | 149 | 2 |
| 1986 | 2,267 | 233 | 2,500 | 14 | 698 | 3 | 218 | 4 |
| 1987 | 1,143 | 127 | 1,270 | 9 | 86 | 1 | 81 | 2 |
| 1988 | 10,272 | 495 | 10,767 | 34 | 1,021 | 5 | 2,816 | 32 |
| 1989 | 3,405 | 4,730 | 8,135 | 28 | 2,236 | 11 | 2,366 | 18 |
| 1990 | 9,939 | 9,549 | 19,488 | 65 | 3,658 | 18 | 1,832 | 22 |
| 1991 | 4,257 | 2,204 | 6,461 | 31 | 1,571 | 7 | 1,450 | 18 |
| 1992 | 2,894 | 1,512 | 4,406 | 28 | 566 | 3 | 649 | 8 |
| MEAN | 3,569 | 2,817 | 6,387 | 28 | 1,269 | 8 | 1,195 | 13 |

## AFOGNAK/SHUYAK ISLAND FISHERIES

The Afognak/Shuyak Island group lies northeast of Kodiak Island. For purposes of this discussion, the group includes the fresh and nearby salt waters surrounding Afognak, Shuyak, Raspberry, Whale, and Marmot islands and their nearby land masses (Figure 8).

The marine and fresh waters of the Afognak/Shuyak Island group support the fourth most popular fishery in the KMA in terms of recreational angling effort expended since 1985 (Figure 2). Since 1985, these waters have accounted for nearly 10% of the recreational angling effort expended in the KMA. There are two major fisheries that occur in the waters of the Afognak/Shuyak Island group. These fisheries target coho salmon and steelhead trout.

### Afognak/Shuyak Island Coho Salmon Fisheries

#### Historical Perspective

Coho salmon return to Afognak/Shuyak Island waters from mid August through mid October. Peak immigration typically occurs during early September with spawning beginning in October.

In the remote waters of the Kodiak Regulatory Area (including the Afognak/Shuyak Island group), the daily bag and possession limits for salmon (other than chinook) greater than 20 inches is 5, and for fish under 20 inches 10.

From 1986 through 1992, the waters of the Afognak/Shuyak Islands area accounted for an average harvest of 3,250 coho salmon, accounting for an average of 20% of the total KMA coho salmon harvest over this period (Table 24). Nearly all of the harvest has occurred in salt water with the majority occurring in the marine waters off Afognak Island.

A creel survey of selected coho salmon fisheries on Afognak and Shuyak islands was conducted during 1987 (Murray 1988b). Results of this survey conducted at five sites (Table 25) showed that anglers fished an estimated 3,520 angler-hours to harvest an estimated 1,324 coho salmon. In 1987 the Afognak Lagoon coho fishery, which is the largest fishery on Afognak, was not surveyed so the harvest estimate for the surveyed sites cannot be compared to the statewide mail survey for the entire Afognak/Shuyak area. In 1990 a creel survey was conducted in Afognak Bay and Lagoon and estimated 3,700 angler-hours and harvested an estimated 3,010 coho 900 fish (Schwarz and Sonnichsen 1991).

The 1990 harvest estimated for Afognak Lagoon of 3,010 coho compares with a mail survey estimate for the entire Afognak/Shuyak Island area of 3,096. Again, these two estimates cannot be compared because the creel survey estimate is just for a portion of the total Afognak/Shuyak Island area. However, the closeness of these two estimates shows that the mail survey serves as an order of magnitude estimator for the Afognak/Shuyak Island coho salmon fisheries.

Recent Fishery Performance

The sport harvest of coho salmon from Afognak/Shuyak Island waters during 1992 (3,650) was average (Table 24). This harvest accounted for 22% of the total coho salmon harvest from KMA waters during 1992. In addition to the harvest of 3,650 coho salmon from Afognak/Shuyak Island waters during 1992, an additional 2,650 coho salmon were estimated to have been caught and released by sport anglers fishing Afognak/Shuyak Island waters during 1992 (Mills 1993). Based on this, anglers released an estimated 42% of the coho salmon they caught fishing Afognak/Shuyak Island waters during 1992.

Sport fishing opportunities for coho salmon in the Afognak/Shuyak Islands area were good during 1993, especially in Pauls Bay, Shuyak Island and Marka Bay. Harvest information for the 1993 season is not available at this time. However, the harvest is expected to be above average.

Management Objectives

Management objectives for this fishery are to provide angling opportunities at a level commensurate with the ability of the fishery resource to support.

Recent Board of Fisheries Actions

The most recent action affecting this fishery occurred in 1987 when the Alaska Board of Fisheries reduced the bag and possession limit for salmon (other than chinook) from 6 daily and 12 in possession to 5 and 5, respectively.

Current Issues

There has been a perception in the past that sport anglers have overexploited the coho salmon resource in Afognak/Shuyak Island waters. Monitoring of selected fisheries on the islands during 1987 and again during 1990 demonstrated this perception to be in error. Given such findings, we do not recommend continuing these programs.

Marka Bay on Afognak Island supports a small but popular coho fishery. There have been increasing complaints of crowding and bag limit violations in this fishery.

Ongoing Research and Management Activities

There are currently no ongoing research or management activities specifically directed at this fishery.

Recommended Research and Management Activities

Based on the creel survey conducted during 1990, it is apparent that the Afognak (Litnik) Lagoon fishery for coho salmon is a major fishery rivaling harvest in the Buskin and Pasagshak River sport fisheries. To better monitor the growth of this sport fishery, staff recommends that this location be defined as a specific site in future statewide sport fishing postal survey forms. Other than monitoring these fisheries through the statewide harvest survey, we recommend no specific research or management activities for this

fishery at present. Sport Fish personnel should visit Marka Bay to become familiar with this fishery.


Figure 8. Afognak/Shuyak Islands and surrounding waters.

Table 24. Harvest of coho salmon from Afognak/Shuyak Islands waters of the Kodiak Management Area, 1986-1992.

| Year | KMA Harvest | Afognak/Shuyak Islands | |
|---|---|---|---|
| | | Harvest | % of KMA |
| 1986 | 20,479 | 5,091 | 20 |
| 1987 | 17,355 | 4,383 | 23 |
| 1988 | 18,298 | 3,802 | 18 |
| 1989 | 20,176 | 2,718 | 12 |
| 1990 | 20,065 | 3,096 | 15 |
| 1991 | 17,691 | 3,232 | 18 |
| 1992 | 16,540 | 3,652 | 22 |
| MEAN | 17,399 | 3,249 | 20 |

Table 25. Creel survey statistics for selected sport fisheries for coho salmon on Afognak and Shuyak Islands, 1987 and 1990.

| Year | Location | Effort (Angler-Days) | Harvest (Number of Fish) | Release |
|---|---|---|---|---|
| 1987 | Portage Creek | 1,972 | 589 | |
| | Pauls Bay | 729 | 159 | |
| | Big Bay | 427 | 378 | |
| | Carry Inlet | 289 | 106 | |
| | Shangin Bay | 107 | 92 | |
| | All Sites | 3,524 | 1,324 | 1,016 |
| 1990 | Afognak Lagoon | 3,700[a] | 3,010 | |

[a] Angler hours

## Afognak Island Steelhead Trout Fisheries

### Historical Perspective

Steelhead trout returning to Afognak Island streams are fall-run fish which enter the streams from mid-August through early November. The peak of the run in the lower rivers occurs in mid-September. Spawning takes place mid-April through early June.

Daily bag and possession limits for steelhead/rainbow trout in the remote portions of the Kodiak Regulatory Area (including the Karluk and Ayakulik rivers) are 2 fish, only 1 of which may be 20 inches or more in length. Fishing for steelhead trout in streams and rivers is also closed from April 1 through June 14 to protect spawning fish.

There are several small steelhead populations on Afognak Island which occur in Afognak River, Little Afognak River, Malina Creek, Marka Creek and Pauls Creek. The largest population is in Afognak Lake where kelt counts were as high as 392 in 1991 (Figure 9).

From 1984 through 1991, the waters of the Afognak Island area have accounted for an average harvest of 170 steelhead trout, accounting for an average of 24% of the total KMA steelhead trout harvest over this period (Table 26).

### Recent Fishery Performance

The sport harvest of steelhead in 1992 was 16. This was similar to reported harvest from 1984-1987 which ranged from 15 to 72. The steelhead sport fishery on Afognak Island is not a large directed fishery due to the relatively small remote populations which exist there. Very little is actually known about the fishery or even the specific streams it occurs in. During the years 1988, 1990 and 1991, very large harvests were reported (472, 448 and 357, respectively). It is not known specifically where these fish were harvested from or how to explain these large harvests in an area where steelhead populations are small.

### Management Objective

No specific fishery objectives have been formally established for Afognak Island wild steelhead trout fisheries to date. An assumption of past and current fisheries management, however, has been to follow the guidelines set forth in the Cook Inlet and Copper River Basin Rainbow and Steelhead Trout Management Policy for wild stocks of steelhead trout (ADF&G 1986). This policy provides future Fisheries Boards, staff managers, and the sport fishing public with:

1. management policies and implementation directives for area rainbow and steelhead trout fisheries;
2. a systematic approach for developing sport fishing regulations that includes a process for rational selection of waters for such special management as catch and release, trophy areas, and high yield fisheries; and
3. recommended research objectives.

Recent Board of Fisheries Actions

The most recent regulation change affecting this fishery occurred in 1987 when the Board of Fisheries adopted a proposal that reduced the bag and possession limits for steelhead trout from: 20 inches and over, 3 fish daily and in possession, under 20 inches, 10 fish daily and in possession; to 2 fish daily and in possession, only 1 of which may be 20 inches or more in length. This conservative action was taken to bring the strategy for management of wild trout fisheries in the Kodiak Management Area more in line with the strategy used to manage wild trout fisheries throughout southcentral Alaska. Fishing for steelhead in streams and rivers is also closed from April 1 through June 14 to protect spawning fish.

Current Issues

Little is known about the steelhead trout stocks of Afognak Island. The Afognak (Litnik) River, however, is believed to have the largest stock. During 1990 through 1993, steelhead kelt counts, enumerated at the Afognak River weir, averaged 239. These counts were the largest on record for this system. This indicates that the steelhead trout stocks of the Afognak River have increased over the past several years.

Ongoing Research and Management Activities

There are no major research or management activities regarding this area's steelhead trout stocks ongoing at present.

Recommended Research and Management Activities

Attempts should be made to document if large steelhead harvests, similar to the reported harvests of 1988, 1990 and 1991, are actually occurring of if they are reporting errors.

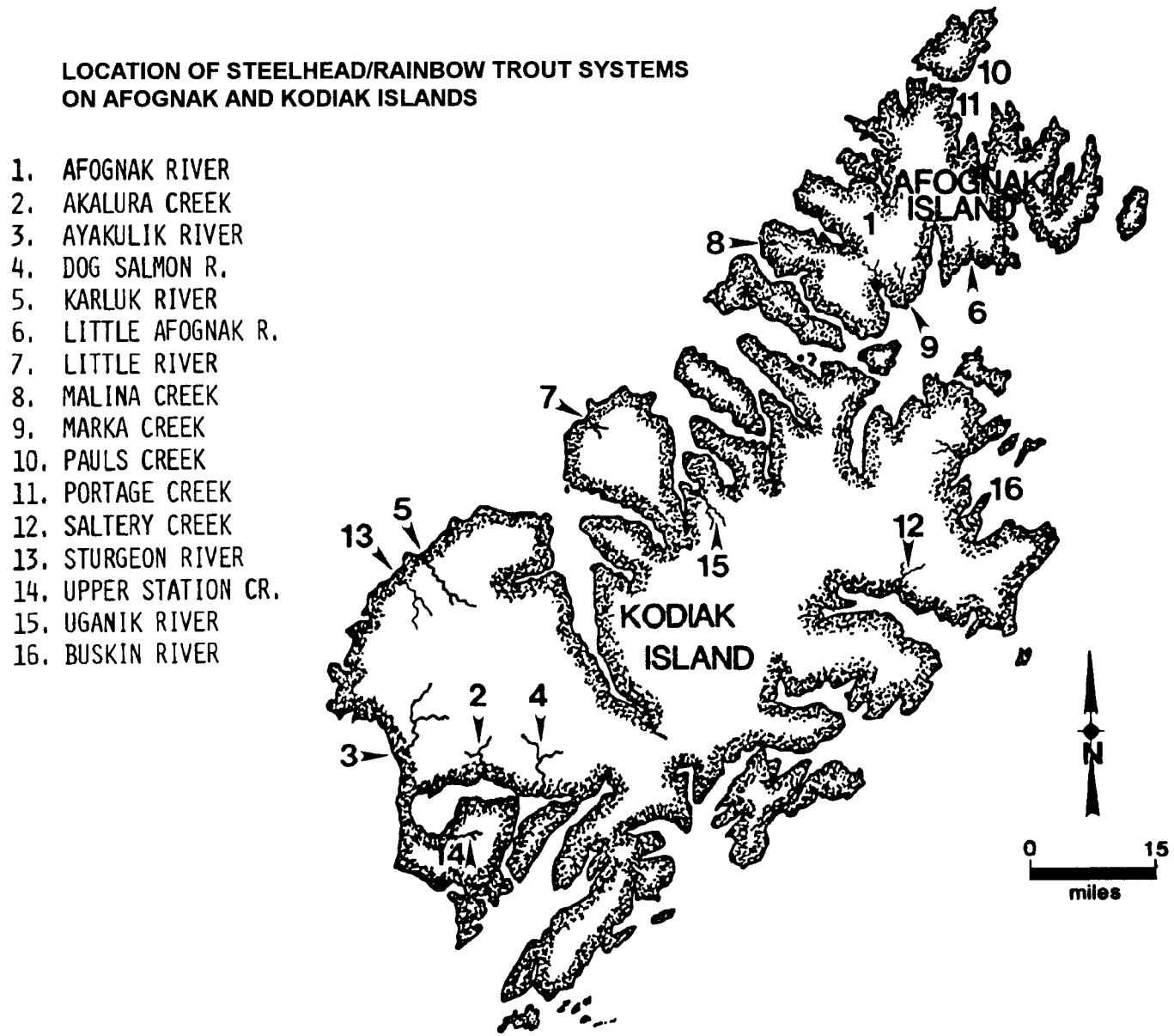


Figure 9. Locations of steelhead trout stocks on Afognak and Kodiak Island.

Table 26. Harvest of steelhead trout from Afognak Island waters of the Kodiak Management Area, 1984-1992.

| Year | KMA Harvest | Afognak Island | |
|---|---|---|---|
| | | Harvest | % of KMA |
| 1984 | 696 | 50 | 7 |
| 1985 | 790 | 46 | 6 |
| 1986 | 321 | 15 | 5 |
| 1987 | 253 | 72 | 28 |
| 1988 | 853 | 472 | 55 |
| 1989 | 778 | 20 | 3 |
| 1990 | 1,120 | 448 | 40 |
| 1991 | 327 | 71 | 22 |
| 1992 | 96 | 16 | 17 |
| MEAN | 557 | 166 | 24 |

## KARLUK AND AYAKULIK (RED) RIVERS FISHERIES

The Karluk and Ayakulik (Red) rivers are located on the southwest end of Kodiak Island (Figure 10). Anglers fishing the Karluk River typically gain access to the river in one of three fashions. Anglers fly into the village of Karluk via either float or wheel plane and subsequently fish Karluk Lagoon and the lower Karluk River (Figure 10). Others fly into Karluk Lake and float the Karluk River downstream either to the portage or all the way downstream to Karluk Lagoon. Finally, access may be gained by flying into the portage reach of the Karluk River via float plane. Anglers accessing the river in this manner either fish just this reach or float down to the lagoon. Anglers fishing the Ayakulik River (Figure 10) typically gain access to the fishery by float-equipped aircraft. The major access location on the upper Ayakulik is at the confluence of the Ayakulik and Bare Creek. The Karluk and Ayakulik rivers support the native stocks of steelhead trout and all five species of salmon. Chinook and coho salmon are the preferred salmon species; however, both rivers have large runs of sockeye and pink salmon which are also harvested by anglers.

### Karluk and Ayakulik Rivers Steelhead Trout Fisheries

#### Historical Perspective

Of 16 river systems on Kodiak and Afognak islands that support populations of steelhead trout (Figure 9), the Karluk and Ayakulik rivers support the largest populations. Steelhead trout returning to the Karluk and Ayakulik rivers are fall-run fish which begin entering the lagoon and the lower river in mid-August and continue through early November. The peak of the run occurs in mid-October. Spawning takes place mid-April through early June.

Daily bag and possession limits for steelhead/rainbow trout in the remote portions of the Kodiak Regulatory Area (including the Karluk and Ayakulik rivers) are 2 fish, only 1 of which may be 20 inches or more in length. Fishing for steelhead trout in streams and rivers is closed from April 1 through June 14 to protect spawning fish.

From 1985 through 1992, sport anglers have harvested an average of 90 and 50 steelhead trout from Karluk and Ayakulik River drainage waters, respectively (Table 27). This harvest has accounted for an average of 18% and 9% of the total KMA steelhead trout harvest from KMA waters over this period (Table 27). The Karluk River supports the largest fishery. However, the Ayakulik River is receiving more fishing pressure in recent years. Steelhead trout returning to these two rivers are also harvested incidentally in the commercial salmon fishery along the southwest side of Kodiak Island (Begich 1992). Karluk steelhead are also harvested by subsistence fishermen from Karluk and Larsen Bay villages.

The annual returns of steelhead trout entering the Karluk and Red rivers during the fall are not completely enumerated because the weir is not operated past September, when the majority of the immigration occurs. After over-wintering and spawning, however, spawned out steelhead trout, called kelts, pass downstream through a weir located on the lower river. Mortality associated with spawning is not fully understood; however, it was estimated during a

research project at 33% and 42% for the 1992 and 1993 spawning population, respectively, in Karluk River (Begich 1993). Kelt counts on the Karluk River have varied from less than 210 to over 4,254 fish during the past 13 years (Table 28). A 4-year trend beginning in 1986 indicated a declining population of steelhead trout in the Karluk River. However, in recent years, the number of emigrating kelts has increased with the 1992 and 1993 counts being the third highest and largest counts on record. In the Ayakulik River, kelt counts have been more consistent and have averaged 960 since 1981 (Table 28). The 1993 count of 1,517 kelts was the largest on record.

Recent Fishery Performance

The sport harvest of steelhead trout from the Karluk and Ayakulik River drainage waters during 1992 was 40 and 16 fish, respectively (Table 26). These harvests accounted for 24% of the total steelhead trout harvest from KMA waters during 1992 (Table 27).

Relying on the estimated harvest to indicate the fishery performance in the Karluk and Ayakulik would be misleading because the fishery is primarily a catch and release fishery. For example, from 1990-1992 the combined total harvest in the Karluk River was 274 steelhead with 2,912 fish released. For every one fish harvested, 11 were released (Table 27). The current bag and possession limit for steelhead over 20 inches in length is one fish. This regulation dictates a very low retention rate because most of the participants will camp along the river and fish for several days, often catching as many as 30 steelhead during a trip.

Harvest and catch estimates are not available yet for steelhead trout in either the Karluk or Ayakulik rivers for 1993. A total of nine anglers voluntarily reported their success to the Kodiak office after fishing in the Karluk during October 1993. They estimated their catch at 550 steelhead with a harvest of approximately 15 fish. A total of 63 angler-days were expended generating an average catch rate of nine fish per day.

The weir on the Karluk River was operated through September 28 and documented an immigration of 1,178 steelhead. This is a record count. The 1992 count was 415 steelhead on September 26, which resulted in a spawning escapement estimated at 7,000 fish after immigration was completed. The 1993 count of 1,178 may indicate a record spawning escapement in the spring of 1994.

The Karluk River steelhead population currently has the potential to produce one of the highest steelhead catches within the state. Figure 11 shows that the Karluk produced the seventh largest catch of steelhead within the state. Whether this fishery continues to develop will depend on several factors including: public access, how fast anglers discover that Karluk is a good place to fish for steelhead, and if the population is maintained at a high abundance level.

Management Objective

Specific fishery objectives have not been formally established for Karluk and Red rivers steelhead trout fisheries to date. An assumption of past and current fisheries management, however, has been to follow the guidelines set forth in the Cook Inlet and Copper River Basin Rainbow and Steelhead Trout

Management Policy for wild stocks of steelhead trout (ADF&G 1986). This policy provides future Fisheries Boards, staff managers, and the sport fishing public with:

1. management policies and implementation directives for area rainbow and steelhead trout fisheries;
2. a systematic approach for developing sport fishing regulations that includes a process for rational selection of waters for such special management as catch and release, trophy areas, and high yield fisheries; and
3. recommended research objectives.

A primary research objective is to establish a relationship between spawning population size and spring kelt counts. Once this relationship is established, monitoring the size of the spawning population will be possible through examining kelt counts.

Recent Board of Fisheries Actions

The Board of Fisheries adopted a proposal during its 1987 finfish meeting which became effective in 1988 that reduced the bag and possession limits for steelhead trout from 20 inches and over, 3 fish daily and 6 in possession, under 20 inches, 10 fish daily and in 20 possession; to 2 fish daily and in possession, only 1 of which may be 20 inches or more in length. This conservative action was taken to bring the strategy for management of wild trout fisheries in the Kodiak Management Area more in line with the strategy used to manage wild trout fisheries throughout southcentral Alaska. In 1985, fishing for steelhead trout in streams and rivers was closed from April 1 through June 14 to protect spawning fish.

The reduction in bag limit to 1 fish over 20 inches has resulted in less emphasis on utilizing steelhead trout as a "meat fish." The long-term benefit of this regulation should be the maintenance of high quality fisheries for steelhead trout. In the Karluk River, closing fishing during the spawning season and bag limit reductions resulted in a slightly lower harvest and in anglers practicing "catch and release" more often. In 1992, in addition to the 40 steelhead that were harvested on the Karluk, 898 were released. On the Ayakulik River, 16 steelhead were harvested while 418 were released, indicating a high release rate occurred. There is no way to determine if these released fish were kelts taken incidentally during the chinook run or fish taken during a directed steelhead fishery in the fall.

Current Issues

A large decrease in steelhead abundance was noted in 1986 through 1989 in the Karluk River. Kelt counts during these 4 years averaged 450, compared to the average from the previous 4 years of 2,430 (Table 28). In response to this decline, the Sport Fish Division began a research project on Karluk River steelhead in 1991. The abundance of Karluk steelhead, as indicated by kelt counts, began to increase in 1990, and the 1993 kelt count of 4,254 was the highest on record. This rebound in steelhead abundance is encouraging and makes fisheries restrictions to preserve stock conservation unnecessary at this time.

During a Larsen Bay household survey conducted by the Subsistence Division, 37 households reported catching 528 steelhead during the winter/spring of 1992/93. The only regulations which allow for the harvest of steelhead are sport fish regulations which allow for a possession limit of 1 fish over 20 inches in length, and the subsistence regulations which allow for incidental catch steelhead in net fishing to be retained. Since rod and reel is the gear type used, this fishery is illegal. The fishery has been conducted for many years and documented through the department surveys. However, there are no regulations that permit it. A program to inform participants that the current fishery is illegal and the process available to make it a legal fishery should be undertaken.

Maintaining and operating effective downriver kelt emigration through salmon counting weirs is essential. Delayed emigration due to weirs can result in increased mortality to steelhead kelts. Downriver passages or traps have proven effective, and an aluminum trap was built, installed and operated in the Karluk in 1992 and on the Ayakulik in 1993.

A final concern involves maintaining adequate angler access to these recreational fisheries as native owners and the Kodiak National Wildlife Refuge develop their land management strategies.

Ongoing Research and Management Activities

Since 1991, the Division of Sport Fish has conducted a comprehensive research project on the Karluk River steelhead population. This study has investigated the potential and magnitude of the incidental commercial harvest of steelhead from marine waters near the Karluk River. The study documented sport harvest, subsistence harvest, and estimated the number of spawning steelhead in the Karluk from the 1991 and 1992 return years. The complete results obtained during the first 2 years of this project are presented in Begich (1992 and 1993). A summary of the important findings follows.

From August 15 through September 30, commercial purse seine and set gill net catches from selected waters along the southwest side of Kodiak Island were sampled for the incidental harvest of steelhead trout. The total estimated harvest from these fisheries was 819 in 1991 and 417 in 1992. Karluk stock contribution to this harvest could not be assessed. However, it is believed that bycatch is likely comprised of mixed stocks due to the proximity of other steelhead systems near the Karluk (Figure 9).

Sport harvest of steelhead in the Karluk was low in comparison to release in 1991 and 1992, 128:628 and 40:898, respectively. Subsistence harvest has been sporadically estimated since 1982. However, an increase in harvest was observed between 1992 and 1993. Karluk Village residents harvested an estimated 47 fish from the 1991 return and 107 fish from the 1992 return. Larsen Bay residents harvested an estimated 230 and 614 steelhead, respectively, from the 1991 and 1992 return years.

The estimated abundance of steelhead spawning in the Karluk River during 1992 was 4,107 (SE = 134) fish and 7,026 (SE = 308) fish in 1993. The majority of the spawning populations has been composed of initial spawning fish, 78% in 1992 and 87% in 1993. In both years, repeat spawners made up less than 20% of the spawning population (18% and 12%), followed by multi-repeat spawners (4%

and 1%). Overall spawning survival was estimated at 67% in 1992 and 58% in 1993.

During 1993, the Division of Sport Fish constructed a downriver steelhead kelt trap which was incorporated into the Division of Commercial Fisheries and Development weir on the Ayakulik River. Steelhead were enumerated and subsampled for length and age. Seventy-four percent of the emigrating steelhead population was composed of initial spawners with a mean fork length of 647 mm, while 23% were repeat spawners (676 mm FL) and 3% multi-repeat spawners (776 mm FL).

Recommended Research and Management Activities

The research program initiated during 1991 should be continued. Also, staff should actively participate in fishery, recreational, and land management planning in the Karluk and Ayakulik areas.

Another mark and recapture estimate of spawning population is proposed for the spring of 1994. This will be the third consecutive year where an estimate of spawning abundance will be made. Information gained will include spawning mortality, age class composition, and verification of scale aging in addition to spawning abundance. Establishing the relationship between the number of kelts and the number of spawners will make it possible to monitor the steelhead spawning abundance after the research project has ended.

Two items which have not been addressed so far are the incidental harvest of outmigrating kelt in the June commercial salmon fishery and an on-the-ground monitoring of the fall sport steelhead fishery.

Monitoring the June commercial fishery would be logistically difficult because June kelts are not purchased by processing tenders or land-based facilities because of their poor condition. In order to document the harvest of kelts, personnel would have to be stationed on the fishing vessel where the fish are discarded once landed. Monitoring a mobile purse seine fleet of 391 for a relatively small kelt catch would be very difficult and costly. It is unlikely this research will be pursued.

During 1992, the Karluk River was ranked seventh in the state in terms of steelhead caught by anglers. During 1993, interest in the fishery increased and the catch is expected to increase significantly over 1992. The Karluk fishery has been typified by low angler effort and extremely high catch rates. With increased interest and population size, it will not be surprising if the Karluk produces one of the largest steelhead catches in the state over the next few years. It is recommended that department personnel be on the grounds in October to observe the fall 1994 fishery. A complete census can be made of the catch and harvest of steelhead. This will allow a determination of how many steelhead are harvested in the directed fall steelhead fishery. Current figures from Mills include steelhead caught in the fall and steelhead kelts caught incidentally during the June king fishery.

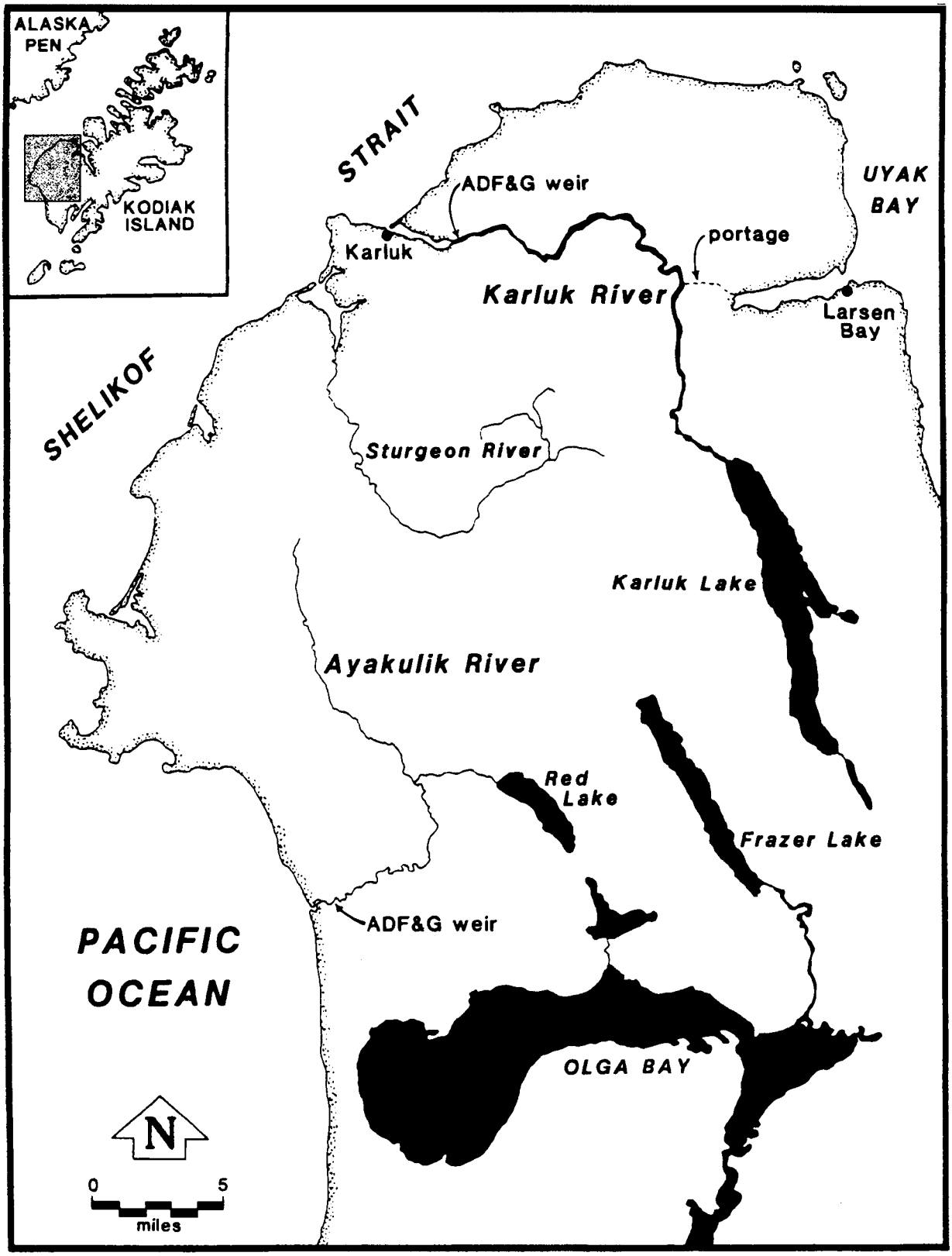


Figure 10. The Karluk and Ayakulik rivers.

Table 27. Harvest of steelhead trout from the Karluk and Red (Ayakulik) River drainages, 1984-1992.[a]

| Year | Karluk River | | Red River | | Total KMA Harvest |
|---|---|---|---|---|---|
| | Harvest | # Released | Harvest | # Released | |
| 1984 | 150 | | 49 | | 696 |
| 1985 | 167 | | 15 | | 790 |
| 1986 | 0 | | 0 | | 321 |
| 1987 | 72 | | 0 | | 253 |
| 1988 | 18 | | 91 | | 853 |
| 1989 | 20 | | 279 | | 778 |
| 1990 | 86 | 1,053 | 17 | | 1,120 |
| 1991 | 148 | 961 | 96 | 228 | 327 |
| 1992 | 40 | 898 | 16 | 418 | 96 |
| MEAN | 86[b] | 971 | 59 | 323 | 557 |

[a] Reported catches of rainbow trout from the Ayakulik and Karluk drainages are treated as steelhead. The rainbow trout populations in these drainages are so small, relative to the steelhead populations, that reported rainbows are probably misidentified steelhead.

[b] Rainbow trout have not been added to the 1984-89 Karluk harvest.

Table 28. Counts of steelhead trout kelts from the Karluk and Red (Ayakulik) River drainages, 1981-1993.

| Year | Karluk River | Red River |
|---|---|---|
| 1981 | 2,194 | 1,108 |
| 1982 | 1,096 | 54 |
| 1983 | 4,203 | 1,351 |
| 1984 | 2,512 | 1,306 |
| 1985 | 1,924 | 693 |
| 1986 | 296 | 1,016 |
| 1987 | 687 | 727 |
| 1988 | 210 | 918 |
| 1989 | 611 | 789 |
| 1990 | 1,029 | 970 |
| 1991 | 1,475 | 910 |
| 1992 | 2,862 | 1,174 |
| 1993 | 4,259 | 1,517 |
| MEAN | 1,796 | 963 |

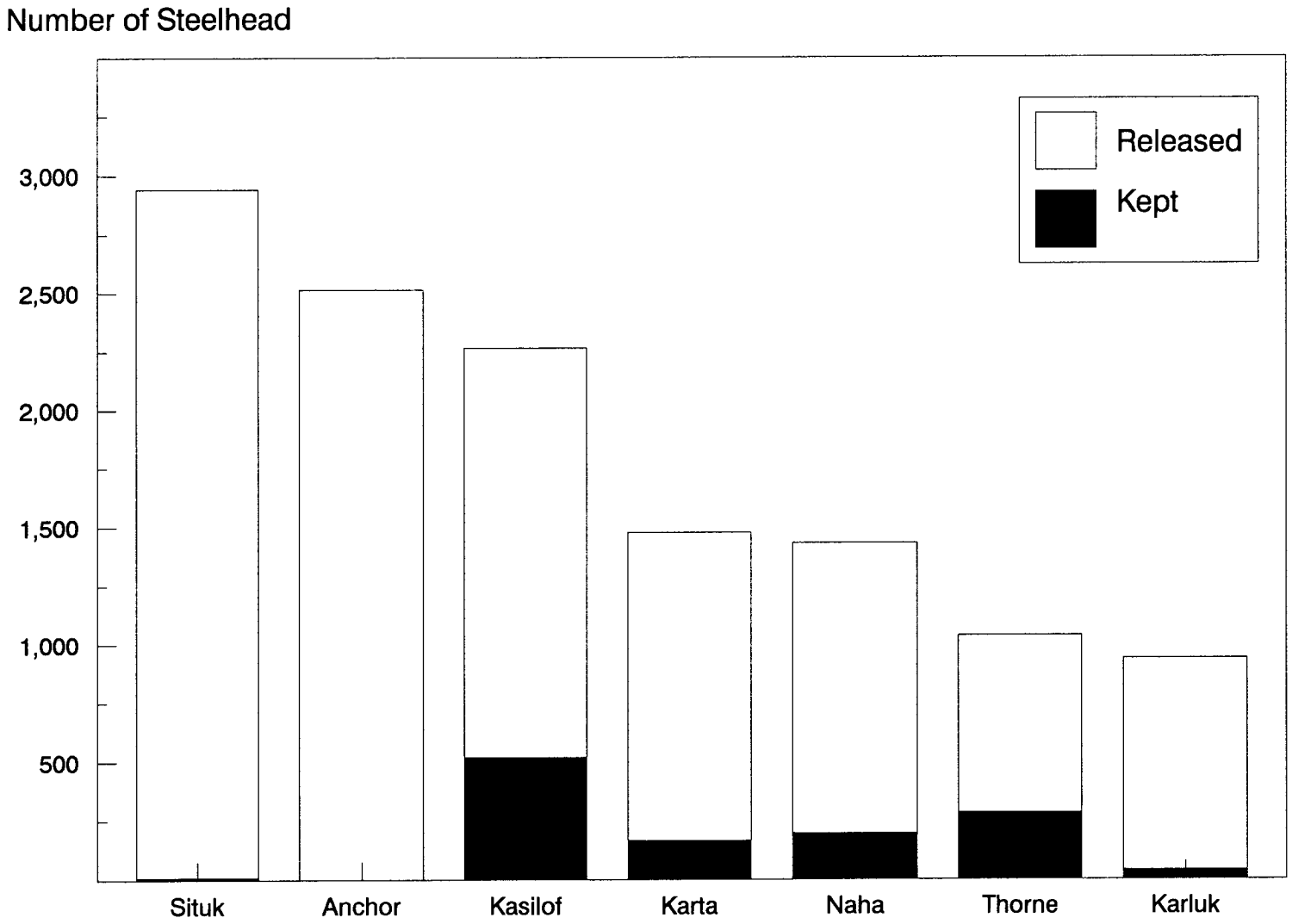


Figure 11. Sport caught steelhead catches from Alaskan rivers reporting the highest catches during 1992.

## Karluk and Ayakulik Rivers Chinook Salmon Fisheries

### Historical Perspective

The Karluk and Ayakulik (Red) rivers support the only populations of native chinook salmon in the Kodiak Regulatory area. Chinook salmon return to the Karluk and Ayakulik rivers from late May through mid-July with 50% of the immigration usually passing lower river weirs by June 15. Chinook salmon in the Karluk River spawn from the outlet of Karluk Lake downstream to just above the lagoon. Few, if any, chinook salmon enter Karluk Lake or the tributaries to the lake. Spawning occurs from mid-August through mid-September. The distribution of spawning chinook salmon in the Ayakulik River begins just above tide water and extends upriver. One of the major spawning tributaries is a fork on the Ayakulik just upriver from the Red River. Few, if any, fish enter Red Lake. Spawning occurs from late July through late August. Fishing for chinook salmon is open year-round throughout both the Karluk and Ayakulik rivers. The bag and possession limit is 3 fish, only 2 of which may be over 28 inches. In addition, there is a provision which allows the harvest of 10 chinook salmon under 20 inches in length. The Statewide Sport Fish Harvest Survey provides estimates of harvest for the recreational fisheries in these waters. Chinook salmon bound for both the Karluk and Ayakulik rivers are also harvested in commercial and subsistence fisheries.

The estimated annual sport harvest of chinook salmon from the Karluk and Ayakulik rivers from 1983 through 1992 has been 580 and 340 fish, respectively (Table 29). The largest estimated harvest was 1,600 in the Karluk River and 780 in the Ayakulik River.

Escapement of chinook salmon into the Karluk and Ayakulik rivers is enumerated through weirs located near the terminus of each river. Escapement of chinook salmon into the Karluk River has averaged approximately 9,860 fish during the past 12 years (1981-1993), with individual year's totals ranging from 4,430 to 14,440 (Table 30). In the Ayakulik River, escapement of chinook salmon has averaged approximately 10,880 fish during the same period with individual year's totals ranging from 3,320 to 21,370 (Table 30). Based on these escapements, the exploitation rate of the inriver sport fishery has been low.

### Recent Fishery Performance

Harvests of chinook salmon during 1992 from the Karluk and Ayakulik rivers were 860 and 780, respectively (Table 29). These are the second largest and largest harvest on record for each system, respectively. Escapement of chinook salmon into the Karluk and Ayakulik rivers during 1992 was 9,600 and 9,140 respectively (Table 30). In addition to the 860 chinook harvested in 1992 in the Karluk River, 2,750 were caught and released. In the Ayakulik, 3,200 were caught and released.

Harvest figures are not available from the statewide harvest summary for the 1993 season. However, a creel survey was conducted on the Karluk River by the Sport Fish Division and estimated a harvest of 569 chinook and a release of 2,566. Angler-days were estimated at 1,572. This estimate does not include figures for the portage area because the private landowner there denied state personnel access. The Ayakulik River was completely censused in 1993 by the United States Fish and Wildlife Service (USFWS) documenting a harvest of 808

chinook and a release of 2,878. Total fishing effort was 1,133 angler-days. Catch rates in the Ayakulik were higher than in the Karluk (3.25 chinook/angler-day vs. 2) despite the fact that escapement into the Karluk was almost double the escapement in the Ayakulik. The harvest from the Ayakulik was the largest on record while the escapement was the lowest since 1986.

Management Objectives

Management objectives for this fishery are to provide angling opportunities at a level commensurate with the ability of the fishery resource to support. Maintaining public access is a primary objective. Department staff should participate with the Federal government and private landowners as they develop their land use plans.

Recent Board of Fisheries Actions

The Board of Fisheries has taken no specific actions with respect to this fishery in recent years.

Current Issues

Sport harvest has been a minor component of the chinook salmon resource exploitation (Table 30). Exploitation of the inriver escapement has averaged 6% on the Karluk and 3% on the Ayakulik. These rates have been increasing in recent years and were 9% and 8% on the Karluk and Ayakulik, respectively, in 1992. In 1993, the USFWS documented a record harvest of 808 chinook, during a year when the weir count of chinook was below average (7,819). After the sport harvest is subtracted and an estimate is made for hook-and-release mortality (7% of 2,878[2]), the spawning escapement was 6,810. The 1993 spawning escapement in the Ayakulik was only 310 fish above the minimum escapement level. The minimum escapement goal on the Ayakulik is set at 6,500. As sport fishing harvest increases, the sport fishery will have a larger influence on the overall exploitation of the chinook return. This is especially true during small returns and fish are still vulnerable to the sport fishery as demonstrated during the 1993 Ayakulik fishery. An emergency order restricting the chinook sport fishery has never been issued for the Ayakulik or the Karluk. However, this may become necessary to achieve minimum spawning escapement levels during poor returns.

The division will be monitoring escapement levels through weir counts to ensure minimum escapements are met. As chinook returns receive more harvest from the commercial and sport fisheries, it is essential that escapement goals are established that will result in optimum returns and harvests. It appears that the current goals (Karluk 4,500-8,000, Ayakulik 6,500-10,000) are working well, as escapement within these ranges have generated excellent returns. In order to refine these goals, the spawning escapement in both rivers is being sampled for age, length and sex data. This will allow the construction of brood tables and evaluation of returns from varying escapement levels.

The Karluk River is almost entirely owned by various Native corporations. Access to fishing along the Karluk River will remain an important issue as Native corporations develop land use strategies. Also there is a possibility

[2] Bendock and Alexandersdottir 1992.

that land along the Karluk will be purchased and made part of the Kodiak National Wildlife Refuge. If this happens, the land use strategies used by the USFWS will affect angler access.

Ongoing Research and Management Activities

Beginning in June 1993, a major research project was initiated on the Karluk River in order to monitor and document the sport fishing harvest and effort. In addition, biological data were collected from the escapement and sport harvest. USFWS, in a cooperative effort, collected the same information from the Ayakulik River. In addition, biological data were collected for the Chignik River escapement. Time of entry data for the Chignik River are presented in Appendix G6. The complete results will be presented in a Fishery Data Series report after the second year of data is collected (1994).

Results for 1993 in the Karluk River indicated a harvest of 569 chinook with a release of 2,566. Fishing effort was estimated at 1,572 angler-days. These figures do not include data from the Portage area on Karluk River. Access was denied state personnel in 1993 so surveys in the Portage area could not be conducted.

The Ayakulik River was completely censused in 1993 by USFWS documenting a harvest of 808 and a release of 2,878 chinook. Total fishing effort was 1,133 angler-days. The Karluk River chinook escapement was sampled at the weir trap. There were 295 chinook sampled. The two dominant age classes were 1.4 (57%) and 1.3 (32%). The sex ratio was 1 male/1.08 females. The average length was 749 mm for age 1.3 and 825 mm for age 1.4.

The Ayakulik River chinook escapement was also sampled at the weir trap. There were 245 chinook sampled. The two dominant age classes were 1.4 (39%) and 1.2 (27%). The sex ratio was 1 male/0.48 females. The average length was 543 mm for age 1.2 and 818 mm for age 1.4.

Recommended Research and Management Activities

The study initiated in 1993 should be continued in 1994. Primary objectives would be to estimate the sport fish effort, harvest and release of chinook salmon in the Karluk and Ayakulik rivers. Spawning escapements in these two rivers should also be sampled for age, sex and length information. The department is committed to conducting a project on the Karluk River in 1994. The USFWS is deciding whether they will be able to conduct another census in the Ayakulik in 1994.

Inseason Management Approach

The Karluk and Ayakulik rivers will be managed so that minimum escapement levels are met (Karluk 4,500, Ayakulik 6,500). Time of entry data exist (Appendix G4, G5) so that it is possible to project how many fish should be through the weir on any specific date in order to achieve a minimum escapement objective. In order to achieve minimum spawning escapements, an inriver goal must be set so that after the sport fish removal occurs, a minimum spawning escapement will still be present. Due to the creel surveys/census scheduled for 1994, the actual sport fish removal will be known as the season progresses. During years when the sport fish harvest is not monitored

Table 29. Harvest of chinook salmon from the Karluk and Red (Ayakulik) River drainages, 1983-1992.

| | Karluk River | | | Ayakulik River | | | |
|---|---|---|---|---|---|---|---|
| Year | Harvest | % of KMA | Number Released | Harvest | % of KMA | Number Released | Total |
| 1983 | 304 | 24 | | 145 | 11 | | 449 |
| 1984 | 187 | 16 | | 437 | 37 | | 624 |
| 1985 | 472 | 42 | | 76 | 7 | | 548 |
| 1986 | 122 | 15 | | 76 | 9 | | 198 |
| 1987 | 199 | 20 | | 126 | 13 | | 325 |
| 1988 | 819 | 38 | | 600 | 28 | | 1,419 |
| 1989 | 559 | 25 | | 390 | 18 | | 949 |
| 1990 | 700 | 61 | 2,262 | 252 | 22 | 2,394 | 952 |
| 1991 | 1,599 | 58 | 3,119 | 563 | 20 | 2,191 | 2,162 |
| 1992 | 856 | 39 | 2,754 | 776 | 35 | 3,199 | 1,632 |
| MEAN | 582 | 34 | 2,712 | 344 | 21 | 2,595 | 859 |

inseason, an inriver escapement goal will be set by adding the average harvest from the past two seasons to the minimum spawning escapement goal.

Table 30. Escapement and harvest of chinook salmon in the Karluk and Red (Ayakulik) River drainages, 1981-1993.

| Year | Escapement | Effort[a] (angler-days) | Harvest | Inriver Exploitation Percent |
|---|---|---|---|---|
| KARLUK RIVER | | | | |
| 1981 | 7,575 | | | |
| 1982 | 7,489 | 1,552 | | |
| 1983 | 11,746 | 2,142 | 304 | 3 |
| 1984 | 7,747 | 820 | 187 | 2 |
| 1985 | 5,362 | 2,520 | 472 | 9 |
| 1986 | 4,429 | -- | 122 | 3 |
| 1987 | 7,930 | -- | 199 | 3 |
| 1988 | 13,337 | 2,128 | 819 | 6 |
| 1989 | 10,484 | 2,420 | 559 | 5 |
| 1990 | 14,442 | 2,969 | 700 | 5 |
| 1991 | 14,022 | 4,547 | 1,599 | 11 |
| 1992 | 9,601 | 5,430 | 856 | 9 |
| 1993 | 13,944 | | -- | -- |
| MEAN | 9,855 | | 581 | 6 |
| AYAKULIK RIVER | | | | |
| 1981 | 8,018 | | | |
| 1982 | 3,320 | | | |
| 1983 | 15,511 | | 145 | 1 |
| 1984 | 6,502 | | 437 | 7 |
| 1985 | 8,151 | | 76 | 1 |
| 1986 | 6,371 | | 76 | 1 |
| 1987 | 15,636 | | 126 | 1 |
| 1988 | 21,370 | | 600 | 3 |
| 1989 | 15,432 | | 390 | 3 |
| 1990 | 11,251 | | 252 | 2 |
| 1991 | 12,988 | 1,780 | 563 | 4 |
| 1992 | 9,135 | 3,340 | 776 | 8 |
| 1993 | 7,819 | | -- | -- |
| MEAN | 10,878 | | 344 | 3 |

[a] This figure represents estimated effort for all species on that river; however, the primary fishery is for chinook.

## Karluk River Sockeye Salmon Fishery

### Historical Perspective

Sockeye salmon return to the Karluk River from June through September. Sockeye salmon in the Karluk River drainage spawn from August through November with about one-third spawning in Karluk Lake and the remaining population spawning in the lake's tributaries. Sockeye salmon bound for the Karluk rivers are harvested in commercial, subsistence, and sport fisheries.

Daily bag and possession limits for salmon, other than chinook, in the remote portions of the Kodiak Regulatory Area are 5 per day, 5 in possession with no size limits. All fisheries for sockeye salmon are open year-round.

From 1985 through 1992, sport anglers have harvested an average of 730 sockeye salmon from Karluk drainage waters (Table 30). This harvest has accounted for an average of 9% of the total KMA sockeye salmon harvest over this period (Table 31). Both Karluk Lake and Karluk River (and its tributaries) support sport fisheries for sockeye salmon. Sport harvests are generally small in relation to past levels of escapement, which were over 1 million sockeye salmon in 1989 and 1991.

### Recent Fishery Performance

The sport harvest of sockeye salmon from Karluk drainage waters during 1992 (800) was average (Table 31). This harvest accounted for 13% of the total sockeye salmon harvest from KMA waters during 1992. The sockeye harvest in the Ayakulik was 630 in 1992 and represented 10% of the KMA total harvest. Anglers released 85% of their catch in the Karluk and 87% of their catch in the Ayakulik.

No estimates of sport harvest or catch are available for this fishery for 1993 at this time.

### Recent Board of Fisheries Actions

The Alaska Board of Fisheries took no specific actions with respect to this fishery during their last meeting.

### Current Issues

As private native owners and the Kodiak National Wildlife Refuge develop their respective land management strategies, maintaining adequate angler access to the Karluk River fishery will become necessary if this fishery is to exhibit continued growth.

### Ongoing Research and Management Activities

There are no specific research or management activities directed at this fishery at present.

Recommended Research and Management Activities

No specific research or management activities are recommended for this fishery at present.

Table 31. Harvest of sockeye salmon from Karluk River drainage waters of the Kodiak Management Area, 1985-1992.

| Year | KMA Harvest | Karluk River | | | Ayakulik River | | |
|---|---|---|---|---|---|---|---|
| | | Harvest | Released | % of KMA | Harvest | Released | % of KMA |
| 1985 | 8,225 | 167 | | 2 | | | |
| 1986 | 6,233 | 275 | | 4 | | | |
| 1987 | 4,562 | 235 | | 5 | | | |
| 1988 | 8,853 | 1,256 | | 14 | | | |
| 1989 | 13,173 | 899 | | 7 | | | |
| 1990 | 8,224 | 1,292 | | 16 | | | |
| 1991 | 5,049 | 894 | | 18 | 179 | 4,077 | 4 |
| 1992 | 6,240 | 798 | 4,634 | 13 | 633 | 4,389 | 10 |
| MEAN | 6,240 | 727 | | 10 | 406 | 4,233 | 7 |

## NORTH KODIAK ISLAND ARCHIPELAGO MARINE BOTTOMFISH FISHERIES

### Historical Perspective

The marine waters of the Kodiak road system zone and the Afognak/Shuyak/Barren Islands support a multitude of marine fish stocks. Of these stocks, halibut and rockfish are the most commonly targeted by recreational anglers. Salmon also represent a large portion of the marine catch. The majority of the halibut and rockfish are harvested from late April through early September. The daily bag and possession limits for halibut are 2 and 4, respectively. Bag and possession limits for rockfish and lingcod became effective in the spring of 1993. The bag and possession limit for rockfish is 10 and 20, respectively, and for lingcod 2 and 4. A season was also established for lingcod, from July 1 through December 31.

From 1986 through 1992 anglers have expended an average of about 25,000 angler-days fishing for marine bottomfish in the KMA. About 75% of this effort is annually expended fishing for halibut with the remaining effort being directed towards rockfish (20%) and lingcod (5%). In general, effort has been relatively stable over this period.

Since 1986, Kodiak road system and Afognak/Shuyak/Barren Island marine waters have supported 83% of the total harvest of halibut and 77% of the historical harvest of rockfish from KMA waters (Table 32). From 1986 through 1992, sport anglers have harvested an average of 4,960 halibut and 4,060 rockfish from Kodiak Road System marine fisheries (Table 32). This harvest has accounted for an average of 46% and 55% of the total KMA halibut and rockfish harvest, respectively, over this period. Over this same period, the marine waters in proximity to the Afognak/Shuyak/Barren Islands group have supported sport harvests of 3,950 halibut and 1,830 rockfish (Table 25). These harvests have represented just under 40% of the total harvest of halibut and nearly 25% of the rockfish harvest from KMA waters.

Although not a commonly targeted species, lingcod are also harvested in the KMA. The average harvest in the management area is 2,050 fish. The Kodiak road system accounts for an average of 36% of the harvest, while the Afognak Islands accounted for 20%. The other major harvest area is in Adak, where in 1992, 300 lingcod were harvested. In addition to the 1992 harvest of 1,750 lingcod, 2,700 fish were released.

### Recent Fishery Performance

Fishing effort in marine waters in 1992 totaled 36,485 angler-days in the Kodiak Regulatory area and 13,903 in the Alaska Peninsula/Aleutian Island Regulatory areas (Appendix A). The amount of fishing effort directed at bottomfish can be estimated by assuming that because 47% of the marine catch was bottomfish, 47% of the marine fishing effort was targeted at bottomfish. The estimated fishing effort for bottomfish in the KMA was 23,682 angler-days $(36,485 + 13,903) \times 0.47)$.

The sport harvests of halibut and rockfish from Kodiak Road System marine fisheries during 1992 (5,070 and 4,320, respectively) were average (Table 32). These harvests accounted for 38% and 66% of the total halibut and rockfish harvests, respectively, from KMA waters during 1992.

The sport harvest of halibut from Afognak/Shuyak/Barren Island marine fisheries during 1992 (4,180) was average while the sport harvest of rockfish during 1992 (980) was below average (Table 32). These harvests accounted for 31% and 15% of the total halibut and rockfish harvests, respectively, from KMA waters during 1992.

Effort and harvest estimates for marine bottomfish are not yet available for the 1993 season.

Recent Board of Fisheries Actions

Regulations were adopted by the Board of Fisheries which affected rockfish and lingcod. These regulations became effective in June of 1993 so they did not affect the 1992 fishing season. Rockfish bag and possession limits were established at 10 and 20 fish, respectively, and lingcod limits were established at 2 and 4, respectively. A fishing season of July 1 through December 31 was established for lingcod in order to protect fish during spawning and nest guarding. Finally, a regulation was adopted where lingcod can only be landed by hand or with a landing net. These regulations only apply to the Kodiak regulatory area and not to the Alaska Peninsula and Aleutian Islands Regulatory area.

Current Issues

Concern was raised that several species of demersal rockfish were being overexploited in areas of high fishing pressure in the KRA. This is especially true for the waters of Chiniak Bay in which most of the area's harvest occurs and where a directed rockfish fishery developed in 1991. Managers believed that levels of commercial and sport harvests experienced during 1991 were not sustainable in that similar levels of harvest in other areas of Alaska have lead to overexploitation of these species. The department, therefore, proposed limiting rockfish harvests. Restrictions adopted with respect to the sport fishery are listed above. Conservative quotas were placed on the commercial fishery so that no more than 100,000 pounds of rockfish could be harvested per year from Chiniak Marmot Bay. There is a 50,000 pound quota for waters near Ugak Bay from Cape Chiniak to Dangerous Cape and shoreward of the 3-mile territorial sea line. These limits were based on the unique life history characteristics of these species (many of these species are long-lived and highly susceptible to overharvest) and other limits adopted for this species in other areas of the state. Although this commercial management plan did not go through the board process and become adopted as a regulation, it is being used to manage this new and developing fishery. The restrictions placed on the commercial and sport fisheries will help ensure stock conservation.

Ongoing Research and Management Activities

The sport harvest of groundfish is sampled annually at the primary boat harbors in Kodiak. Data collected from rockfishes, lingcod, and halibut include length, weight, age, sex, gonad condition, and location of capture. These data are monitored for broad trends in species, age, and size composition that may be indicative of overharvest.

It is hoped that abundance and sustained yield can be estimated once a sufficient time series of data is available. Halibut age and size data are summarized and forwarded to the International Pacific Halibut Commission for incorporation into their stock assessment models.

Recommended Research and Management Activities

Staff recommends continuation of the current research program.

Table 32. Harvest of halibut and rockfish from Kodiak Road System and Afognak/Shuyak/Barren Island waters of the Kodiak Management Area, 1986-1992.

| Year | KMA Harvest | Kodiak Road System | | Afognak/Shuyak/Barren Is. | |
|---|---|---|---|---|---|
| | | Harvest | % of KMA | Harvest | % of KMA |
| HALIBUT | | | | | |
| 1986 | 10,960 | 5,932 | 54 | 3,699 | 34 |
| 1987 | 9,869 | 4,510 | 46 | 4,292 | 44 |
| 1988 | 7,749 | 3,600 | 47 | 3,512 | 45 |
| 1989 | 10,435 | 4,663 | 45 | 4,449 | 43 |
| 1990 | 11,679 | 4,845 | 42 | 3,630 | 31 |
| 1991 | 12,110 | 6,004 | 50 | 3,878 | 32 |
| 1992 | 13,505 | 5,071 | 38 | 4,178 | 31 |
| MEAN | 10,901 | 4,960 | 46 | 3,948 | 37 |
| ROCKFISH | | | | | |
| 1986 | 5,165 | 3,180 | 62 | 917 | 18 |
| 1987 | 8,547 | 3,223 | 38 | 3,278 | 38 |
| 1988 | 13,244 | 5,930 | 45 | 4,220 | 32 |
| 1989 | 5,325 | 2,637 | 50 | 1,505 | 28 |
| 1990 | 6,519 | 3,251 | 50 | 367 | 6 |
| 1991 | 8,215 | 5,882 | 72 | 1,502 | 18 |
| 1992 | 6,566 | 4,316 | 66 | 982 | 15 |
| MEAN | 7,655 | 4,060 | 55 | 1,825 | 22 |
| LING COD | | | | | |
| 1991 | 2,345 | 729 | 31 | 259 | 11 |
| 1992 | 1,753 | 709 | 40 | 484 | 28 |
| MEAN | 2,049 | 719 | 36 | 372 | 20 |

## DEVELOPING FISHERIES

Two fisheries for chinook salmon along the Kodiak Road system began to develop in 1992. Since these are new fisheries, information is very limited. These fisheries are listed in this section to acknowledge they exist, describe them, and recommend possible management concerns if necessary.

### Mill Bay Chinook Salmon

Beginning in 1989, the Department of Fish and Game has stocked chinook salmon smolt in Island Lake, which drains into Mill Bay. Approximately 100,000 smolt are transported from Elmendorf fish hatchery to Kodiak each May. These fish were transported via barge which is costly and also stresses the fish. In 1991 over half of the smolt died in transport. In 1992 the smolt were flown to Kodiak on a National Guard C-130 as part of a training mission. The fish were released in excellent condition. In 1993, private industry objected to the use of government aircraft to transport the smolt so vessel transportation was again utilized. In 1993, a reduced load of 67,000 smolt was put aboard a hatchery tank truck and shipped via ferry. These smolt arrived in healthy condition. Since the fish are smolt, they migrate to sea immediately after release.

In 1991, several adults returned to Mill Bay, and one 7 lb male was harvested. In 1992, the adult return was much larger. The area biologist collected scales from 8 fish which were landed between June 7 and 16. Six of these fish had readable scales, five were 3-ocean fish, and one was a 2-ocean fish. Fish ranged between 15 and 20 pounds. Mill Bay Beach was sporadically observed on eight occasions from June 7 to June 28, and a total of 102 people were observed fishing. The department did not conduct a formal creel survey so an accurate estimate of harvest is impossible. Based on sporadic observations and informal interviews from anglers who fished Mill Bay regularly, it was estimated that the harvest of chinook at Mill Bay was approximately 50 fish. The 1992 statewide harvest survey estimated the harvest at 117 chinook.

In 1993 the harvest was estimated at 250 chinook from periodic observations. The statewide harvest survey for 1993 is not available at this time. During 1992 and 1993 chinook salmon were noted in the Buskin River (15-30 fish each year). These fish were probably a result of stray fish from the Mill Bay chinook stocking project. In 1993 the Buskin River was open to sport fishing for chinook salmon in order to harvest these chinook. (Chiniak Bay streams are closed to chinook salmon fishing. No natural runs exist in Chiniak Bay). If straying continues, the Buskin River should continue to be open, either by emergency order or by permanent regulation, so that these stocked fish can be harvested.

If a 3% survival occurs on the smolt release, eventually 3,000 adults will return each year. In order to distribute effort and relieve crowding, a fish transport permit was received to split the outstocking of smolt between Mill Bay and Mission Beach. Stocking of Mission Beach has only occurred in 1991, when a large percentage of the smolt died due to transport stress. The outstocking of Mission Beach will resume in 1994 if a full load of 100,000 smolt can be transported to Kodiak. If only a partial load is transported due to limited transporting facilities or if fish arrive in poor condition, only Mill Bay will be stocked.

During the initial small return of an age class of chinook in 1992, the parking facilities at Mill Bay Beach were filled to capacity. Once the program proves successful, parking facilities at both Mill Bay and Mission Beaches should be improved and enlarged.

Snagging in salt water is currently legal. A group of anglers was disappointed with the quality of the chinook harvest at Mill Bay Beach because they believed fish were harassed by snagging tackle and would not bite. These anglers petitioned the Board of Fisheries to adopt an agenda change which would address this concern. No proposals were submitted addressing this issue because the proposal deadline was in April, and the first fishable return of chinook did not return until June so the problem was not noted until after the proposal deadline. The Board of Fisheries did not accept the agenda change to consider this issue because a conservation issue was not involved. The Kodiak area will not be open for regulation changes again until 1995. Conflicts between snaggers and nonsnaggers is expected to increase as the fishery develops. A similar problem occurs in the same area for the hatchery return of coho salmon.

Chiniak Bay Chinook Salmon

Chiniak Bay is a feeding area for chinook salmon as they grow and mature at sea. These chinook have been harvested in the past in small numbers, often inadvertently when anglers are fishing for halibut or rockfish (Table 33). In 1992 anglers began to target on these chinook by trolling. The harvest estimate for the 1992 season is 350 chinook, significantly larger than the 1987-1990 average of 55. Based on informal interviews it is likely the harvest will approximate 1,000 fish in 1993. The 1993 mail survey will provide a harvest estimate for this developing fishery.

Table 33. Harvest of chinook salmon from the marine waters of Chiniak Bay, 1987-1992.

| Year | Harvest |
|---|---|
| 1987 | 18 |
| 1988 | 73 |
| 1989 | 84 |
| 1990 | 44 |
| 1991 | 188 |
| 1992[a] | 346 |
| MEAN | 126 |

[a] Does not include 117 chinook harvested in Mill Bay.

## OTHER FISHERIES

Several smaller fisheries for other species also occur in the KMA. These include fisheries for wild rainbow trout and Arctic grayling, chum salmon, smelt, and clams. Because these fisheries are generally small, little specific management or research is directed towards them nor have specific management or fishery objectives been set for the fisheries. A brief summary of these fisheries is provided below.

### Rainbow Trout

Wild stocks of rainbow trout occur in several systems within the Kodiak Archipelago and in an unknown number of lakes and streams on the Alaska Peninsula. Some of the more well known rainbow trout systems include the Afognak River, Malina River, Upper Station Creek and Little River. All of these populations are comprised of small numbers of fish. The average sport harvest of wild rainbow trout from the waters from 1979 through 1992 has been 1,802 in the Kodiak regulatory area and 325 from the Alaska Peninsula/Aleutian Islands regulatory area (Appendix A8). In addition, approximately 20 roadside lakes are stocked along the Kodiak road system.

### Arctic Grayling

Arctic grayling are stocked in four lakes on the Kodiak Road system and occur naturally in several streams along the Alaska Peninsula and Aleutian Island chain. The sport harvest of Arctic grayling in Kodiak waters from 1977 through 1992 has averaged 207 (Appendix A13). The harvest of grayling from the Alaska Peninsula is 212.

### Chum Salmon

Chum salmon have not been typically targeted by recreational anglers in the KMA, however, some have been taken incidental to other salmon species. An average of only 1,230 chum salmon have been harvested per year by sport anglers from KMA waters from 1977 through 1992 (Appendix A11). Most (73%) of the annual chum salmon harvest has occurred in the waters of the Kodiak Regulatory Area. In both the Alaska Peninsula/Aleutian Island Regulatory Area and the Kodiak Regulatory Area nearly all of the harvest of chum salmon has occurred in fresh water (Appendix A11).

### Clams

From 1977 through 1992, the average harvest of razor clams has been 4,198, all of which were reported from the Kodiak Regulatory Area (Appendix A7). Kodiak Island has several beaches which produce razor clams. There probably is a reporting problem in that many people may be reporting all clams harvested as razor clams. It appears unlikely that the large harvests reported are possible given the small number of beaches which produce razor clams in the Kodiak regulatory area.

### Other Fish

From 1977 through 1990, the average harvest of other fish has been 6,126 (Table 4). This harvest has represented an average of 7% of the total sport

fish harvest from KMA waters over this period. Other fish may include such species as cod, flounder and sculpins.

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Appendix A

Recreational Fish Harvests, by Species, by Anglers
Fishing Kodiak Management Area Waters, 1977-1992

Appendix A1. Number of Dolly Varden/Arctic char harvested by sport anglers fishing Kodiak Management Area waters, 1977-1992[a].

| | | Alaska Peninsula/Aleutian Island Regulatory Area | | | | | | Kodiak Island Regulatory Area | | | | | |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| | | Salt Water | | Fresh Water | | Area Total | | Salt Water | | Fresh Water | | Area Total | |
| Year | KMA Total | Harvest | Percent | Harvest | Percent | Total | % of KMA | Harvest | Percent | Harvest | Percent | Total | % of KMA |
| 1977 | 15,900 | | | | | 1,364 | 9 | 1,084 | 8 | 13,452 | 93 | 14,536 | 91 |
| 1978 | 16,962 | | | | | 1,157 | 7 | 2,830 | 18 | 12,975 | 82 | 15,805 | 93 |
| 1979 | 33,311 | | | | | 7,890 | 24 | 5,281 | 21 | 20,140 | 79 | 25,421 | 76 |
| 1980 | 30,685 | | | | | 10,022 | 33 | 2,979 | 14 | 17,684 | 86 | 20,663 | 67 |
| 1981 | 31,482 | 3,402 | 28 | 8,564 | 72 | 11,966 | 38 | 2,441 | 13 | 17,075 | 88 | 19,516 | 62 |
| 1982 | 36,065 | 4,695 | 38 | 7,599 | 62 | 12,294 | 34 | 5,931 | 25 | 17,840 | 75 | 23,771 | 66 |
| 1983 | 30,192 | 2,843 | 26 | 7,910 | 74 | 10,753 | 36 | 3,934 | 20 | 15,505 | 80 | 19,439 | 64 |
| 1984 | 28,528 | 1,536 | 28 | 3,900 | 72 | 5,436 | 19 | 4,814 | 21 | 18,278 | 79 | 23,092 | 81 |
| 1985 | 22,562 | 659 | 13 | 4,387 | 87 | 5,046 | 22 | 2,291 | 13 | 15,225 | 87 | 17,516 | 78 |
| 1986 | 26,459 | 2,069 | 36 | 3,733 | 64 | 5,802 | 22 | 6,375 | 31 | 14,282 | 69 | 20,657 | 78 |
| 1987 | 15,831 | 2,083 | 30 | 4,985 | 71 | 7,068 | 45 | 2,299 | 26 | 6,464 | 74 | 8,763 | 55 |
| 1988 | 22,592 | 2,148 | 55 | 1,781 | 45 | 3,929 | 17 | 8,004 | 43 | 10,659 | 57 | 18,663 | 83 |
| 1989 | 18,635 | 1,392 | 32 | 2,977 | 68 | 4,369 | 23 | 2,771 | 19 | 11,495 | 81 | 14,266 | 77 |
| 1990 | 21,052 | 2,524 | 37 | 4,293 | 63 | 6,817 | 32 | 6,042 | 42 | 8,193 | 58 | 14,235 | 68 |
| 1991 | 21,418 | 3,920 | 47 | 4,416 | 53 | 8,336 | 39 | 2,996 | 23 | 10,086 | 77 | 13,082 | 61 |
| 1992 | 11,525 | 1,810 | 44 | 2,326 | 56 | 4,136 | 36 | 1,540 | 21 | 5,849 | 79 | 7,389 | 64 |
| MEAN | 23,950 | 2,423 | 35 | 4,740 | 65 | 6,649 | 28 | 3,851 | 22 | 13,450 | 76 | 17,301 | 72 |

[a] Averages for the fresh and saltwater fisheries for the Alaska Peninsula/Aleutian Islands Regulatory Area do not add up to the total average for the regulatory area due to incomplete data for the years 1977 through 1980.

Appendix A2. Number of pink salmon harvested by sport anglers fishing Kodiak Management Area waters, 1977-1992.

| | | Alaska Peninsula/Aleutian Island Regulatory Area | | | | | | Kodiak Island Regulatory Area | | | | | |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| | | Salt Water | | Fresh Water | | Area Total | | Salt Water | | Fresh Water | | Area Total | |
| Year | KMA Total | Harvest | Percent | Harvest | Percent | Total | % of KMA | Harvest | Percent | Harvest | Percent | Total | % of KMA |
| 1977 | 14,634 | | | | | 115 | 1 | 5,074 | 35 | 9,445 | 65 | 14,519 | 99 |
| 1978 | 18,374 | | | | | 635 | 4 | 7,693 | 43 | 10,046 | 57 | 17,739 | 97 |
| 1979 | 19,698 | | | | | 3,827 | 19 | 8,853 | 56 | 7,018 | 44 | 15,871 | 81 |
| 1980 | 30,093 | | | | | 11,124 | 37 | 8,223 | 43 | 10,746 | 57 | 18,969 | 63 |
| 1981 | 20,650 | 6,555 | 78 | 1,836 | 22 | 8,391 | 41 | 4,677 | 38 | 7,582 | 62 | 12,259 | 59 |
| 1982 | 30,462 | 8,593 | 74 | 3,019 | 26 | 11,612 | 38 | 8,153 | 43 | 10,697 | 57 | 18,850 | 62 |
| 1983 | 12,870 | 3,200 | 81 | 734 | 19 | 3,934 | 31 | 2,780 | 31 | 6,156 | 69 | 8,936 | 69 |
| 1984 | 17,343 | 4,011 | 88 | 553 | 12 | 4,564 | 26 | 4,314 | 34 | 8,465 | 66 | 12,779 | 74 |
| 1985 | 15,426 | 672 | 34 | 1,331 | 67 | 2,003 | 13 | 5,739 | 43 | 7,684 | 67 | 13,423 | 87 |
| 1986 | 17,365 | 350 | 12 | 2,506 | 88 | 2,856 | 16 | 4,769 | 33 | 9,740 | 67 | 14,509 | 84 |
| 1987 | 13,532 | 681 | 36 | 1,189 | 64 | 1,870 | 14 | 5,252 | 45 | 6,410 | 55 | 11,662 | 86 |
| 1988 | 31,296 | 1,640 | 13 | 10,612 | 87 | 12,252 | 39 | 10,040 | 53 | 9,004 | 47 | 19,044 | 61 |
| 1989 | 29,176 | 7,252 | 64 | 4,130 | 36 | 11,382 | 39 | 7,566 | 43 | 10,228 | 58 | 17,794 | 61 |
| 1990 | 29,997 | 12,301 | 55 | 10,232 | 45 | 22,533 | 75 | 2,476 | 33 | 4,988 | 67 | 7,464 | 25 |
| 1991 | 20,789 | 3,923 | 45 | 4,760 | 55 | 8,683 | 42 | 5,132 | 42 | 6,974 | 58 | 12,106 | 58 |
| 1992 | 11,473 | 2,538 | 46 | 3,031 | 54 | 5,569 | 49 | 2,113 | 36 | 3,791 | 64 | 5,904 | 51 |
| MEAN[a] | 20,868 | 4,360 | 53 | 3,565 | 47 | 6,851 | 33 | 5,865 | 41 | 8,152 | 59 | 14,017 | 67 |

[a] Averages for the fresh and saltwater fisheries for the Alaska Peninsula/Aleutian Islands Regulatory Area do not add up to the total average for the regulatory area due to incomplete data for the years 1977 through 1980.

Appendix A3. Number of coho salmon harvested by sport anglers fishing Kodiak Management Area waters, 1977-1992.

| | | Alaska Peninsula/Aleutian Island Regulatory Area | | | | | | Kodiak Island Regulatory Area | | | | | |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| | | Salt Water | | Fresh Water | | Area Total | | Salt Water | | Fresh Water | | Area Total | |
| Year | KMA Total | Harvest | Percent | Harvest | Percent | Total | % of KMA | Harvest | Percent | Harvest | Percent | Total | % of KMA |
| 1977 | 5,722 | | | | | 1,006 | 18 | 1,172 | 25 | 3,544 | 75 | 4,716 | 82 |
| 1978 | 6,033 | | | | | 1,106 | 18 | 1,433 | 29 | 3,494 | 71 | 4,927 | 82 |
| 1979 | 12,496 | | | | | 974 | 8 | 3,606 | 31 | 7,916 | 69 | 11,522 | 92 |
| 1980 | 14,319 | | | | | 1,627 | 11 | 5,442 | 43 | 7,250 | 57 | 12,692 | 89 |
| 1981 | 11,696 | 475 | 43 | 637 | 57 | 1,112 | 10 | 4,449 | 42 | 6,135 | 58 | 10,584 | 91 |
| 1982 | 14,627 | 491 | 38 | 807 | 62 | 1,298 | 9 | 6,612 | 50 | 6,717 | 50 | 13,329 | 91 |
| 1983 | 9,678 | 943 | 51 | 912 | 49 | 1,855 | 19 | 2,025 | 26 | 5,798 | 74 | 7,823 | 81 |
| 1984 | 15,892 | 1,059 | 83 | 221 | 17 | 1,280 | 8 | 6,945 | 48 | 7,667 | 53 | 14,612 | 92 |
| 1985 | 15,032 | 523 | 37 | 884 | 63 | 1,407 | 9 | 6,209 | 46 | 7,416 | 54 | 13,625 | 91 |
| 1986 | 25,458 | 1,062 | 23 | 3,523 | 77 | 4,585 | 18 | 9,220 | 44 | 11,653 | 56 | 20,873 | 82 |
| 1987 | 19,402 | 1,567 | 63 | 923 | 37 | 2,490 | 13 | 8,056 | 48 | 8,856 | 52 | 16,912 | 87 |
| 1988 | 21,379 | 558 | 22 | 2,012 | 78 | 2,570 | 12 | 6,786 | 36 | 12,023 | 64 | 18,809 | 88 |
| 1989 | 23,700 | 2,288 | 59 | 1,610 | 41 | 3,898 | 16 | 5,338 | 27 | 14,464 | 73 | 19,802 | 84 |
| 1990 | 20,065 | 1,360 | 22 | 4,977 | 79 | 6,337 | 32 | 5,916 | 43 | 7,812 | 57 | 13,728 | 68 |
| 1991 | 21,327 | 1,045 | 29 | 2,591 | 71 | 3,636 | 17 | 6,790 | 62 | 10,901 | 62 | 17,691 | 83 |
| 1992 | 16,540 | 1,099 | 38 | 1,773 | 62 | 2,872 | 17 | 5,640 | 41 | 8,028 | 59 | 13,668 | 83 |
| MEAN[a] | 15,465 | 1,038 | 44 | 1,661 | 57 | 2,292 | 15 | 5,256 | 40 | 7,917 | 60 | 13,173 | 85 |

[a] Averages for the fresh and saltwater fisheries for the Alaska Peninsula/Aleutian Islands Regulatory Area do not add up to the total average for the regulatory area due to incomplete data for the years 1977 through 1980.

Appendix A4. Number of halibut harvested by sport anglers fishing KMA waters, 1977-1992.

| Year | KMA Total | Alaska Peninsula & Aleutian Island | | Kodiak Island | |
|---|---|---|---|---|---|
| | | Harvest | % of KMA | Harvest | % of KMA |
| 1977 | 994 | 0 | 0 | 994 | 100 |
| 1978 | 1,721 | 0 | 0 | 1,721 | 100 |
| 1979 | 3,013 | 0 | 0 | 3,013 | 100 |
| 1980 | 3,651 | 0 | 0 | 3,651 | 100 |
| 1981 | 7,711 | 853 | 11 | 6,858 | 89 |
| 1982 | 9,977 | 797 | 8 | 9,180 | 92 |
| 1983 | 8,809 | 264 | 3 | 8,545 | 97 |
| 1984 | 9,148 | 969 | 11 | 8,179 | 89 |
| 1985 | 7,839 | 536 | 7 | 7,303 | 93 |
| 1986 | 11,975 | 1,015 | 9 | 10,960 | 92 |
| 1987 | 11,465 | 1,596 | 14 | 9,869 | 86 |
| 1988 | 9,697 | 1,948 | 20 | 7,749 | 80 |
| 1989 | 11,847 | 1,412 | 12 | 10,435 | 88 |
| 1990 | 11,679 | 2,545 | 22 | 9,134 | 78 |
| 1991 | 17,309 | 5,199 | 30 | 12,110 | 70 |
| 1992 | 13,505 | 2,645 | 20 | 10,860 | 80 |
| MEAN | 8,771 | 1,236 | 11 | 7,336 | 89 |

Appendix A5. Number of sockeye salmon harvested by sport anglers fishing Kodiak Management Area waters, 1977-1992.

| | | Alaska Peninsula/Aleutian Island Regulatory Area | | | | | | Kodiak Island Regulatory Area | | | | | |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| | | Salt Water | | Fresh Water | | Area Total | | Salt Water | | Fresh Water | | Area Total | |
| Year | KMA Total | Harvest | Percent | Harvest | Percent | Total | % of KMA | Harvest | Percent | Harvest | Percent | Total | % of KMA |
| 1977 | 1,848 | | | | | 593 | 32 | 102 | 8 | 1,153 | 92 | 1,255 | 68 |
| 1978 | 2,241 | | | | | 465 | 21 | 479 | 27 | 1,297 | 73 | 1,776 | 79 |
| 1979 | 4,134 | | | | | 1,698 | 41 | 330 | 14 | 2,106 | 87 | 2,436 | 59 |
| 1980 | 4,114 | | | | | 1,936 | 47 | 809 | 37 | 1,369 | 63 | 2,178 | 53 |
| 1981 | 4,698 | 994 | 32 | 2,084 | 68 | 3,078 | 66 | 669 | 41 | 951 | 59 | 1,620 | 35 |
| 1982 | 4,532 | 1,058 | 72 | 419 | 28 | 1,477 | 33 | 1,079 | 35 | 1,976 | 65 | 3,055 | 67 |
| 1983 | 4,438 | 534 | 42 | 754 | 59 | 1,288 | 29 | 986 | 31 | 2,164 | 69 | 3,150 | 71 |
| 1984 | 6,358 | 913 | 94 | 60 | 6 | 973 | 15 | 1,272 | 24 | 4,113 | 76 | 5,385 | 85 |
| 1985 | 8,225 | 199 | 29 | 490 | 71 | 689 | 8 | 1,714 | 23 | 5,822 | 77 | 7,536 | 92 |
| 1986 | 6,233 | 174 | 18 | 800 | 82 | 974 | 16 | 1,590 | 30 | 3,669 | 70 | 5,259 | 84 |
| 1987 | 4,562 | 231 | 58 | 166 | 42 | 397 | 9 | 1,106 | 27 | 3,059 | 73 | 4,165 | 91 |
| 1988 | 8,853 | 2,198 | 84 | 433 | 17 | 2,631 | 30 | 1,019 | 16 | 5,203 | 84 | 6,222 | 70 |
| 1989 | 13,173 | 5,147 | 81 | 1,237 | 19 | 6,384 | 49 | 1,606 | 24 | 5,183 | 76 | 6,789 | 52 |
| 1990 | 8,224 | 1,181 | 55 | 987 | 46 | 2,168 | 26 | 1,985 | 33 | 4,071 | 67 | 6,056 | 74 |
| 1991 | 7,057 | 1,287 | 64 | 721 | 36 | 2,008 | 29 | 960 | 19 | 4,089 | 81 | 5,049 | 72 |
| 1992 | 8,408 | 1,470 | 68 | 698 | 32 | 2,168 | 26 | 1,299 | 21 | 4,941 | 79 | 6,240 | 74 |
| MEAN[a] | 6,069 | 1,282 | 58 | 737 | 42 | 1,808 | 30 | 1,063 | 26 | 3,198 | 74 | 4,261 | 70 |

[a] Averages for the fresh and saltwater fisheries for the Alaska Peninsula/Aleutian Islands Regulatory Area do not add up to the total average for the regulatory area due to incomplete data for the years 1977 through 1980.

Appendix A6. Number of rockfish harvested by sport anglers fishing KMA waters, 1977-1992.

| Year | KMA Total | Alaska Peninsula & Aleutian Island | | Kodiak Island | |
|---|---|---|---|---|---|
| | | Harvest | % of KMA | Harvest | % of KMA |
| 1977 | 2,810 | 0 | 0 | 2,810 | 100 |
| 1978 | 1,907 | 0 | 0 | 1,907 | 100 |
| 1979 | 3,599 | 0 | 0 | 3,599 | 100 |
| 1980 | 1,489 | 0 | 0 | 1,489 | 100 |
| 1981 | 6,663 | 421 | 6 | 6,242 | 94 |
| 1982 | 4,170 | 178 | 4 | 3,992 | 96 |
| 1983 | 3,314 | 62 | 2 | 3,252 | 98 |
| 1984 | 9,347 | 1,116 | 12 | 8,231 | 88 |
| 1985 | 4,890 | 199 | 4 | 4,691 | 96 |
| 1986 | 5,165 | 686 | 13 | 4,479 | 87 |
| 1987 | 8,547 | 2,046 | 24 | 6,501 | 76 |
| 1988 | 13,244 | 1,875 | 14 | 11,369 | 86 |
| 1989 | 5,325 | 255 | 5 | 5,070 | 95 |
| 1990 | 6,519 | 2,677 | 41 | 3,842 | 60 |
| 1991 | 9,259 | 1,044 | 11 | 8,215 | 89 |
| 1992 | 8,106 | 2,454 | 30 | 5,652 | 70 |
| MEAN | 5,897 | 813 | 10 | 5,084 | 90 |

Appendix A7. Number of clams harvested by sport anglers fishing KMA waters, 1977-1992.

| | Kodiak Island |
|---|---|
| | Harvest |
| 1977 | 7,474 |
| 1978 | 3,208 |
| 1979 | 8,363 |
| 1980 | 11,826 |
| 1981 | 3,452 |
| 1982 | 1,944 |
| 1983 | 2,000 |
| 1984 | 7,360 |
| 1985 | 4,970 |
| 1986 | 7,064 |
| 1987 | 2,155 |
| 1988 | 4,614 |
| 1989 | 1,477 |
| 1990 | 173 |
| 1991 | 119 |
| 1992 | 973 |
| MEAN | 4,198 |

Appendix A8. Number of rainbow trout harvested[a] by sport anglers fishing KMA waters, 1977-1992.

| Year | KMA Total | Alaska Peninsula & Aleutian Island | | Kodiak Island | |
|---|---|---|---|---|---|
| | | Harvest | % of KMA | Harvest | % of KMA |
| 1977 | 1,747 | 275 | 16 | 1,472 | 84 |
| 1978 | 1,590 | 596 | 38 | 994 | 63 |
| 1979 | 1,345 | 373 | 28 | 972 | 72 |
| 1980 | 3,211 | 688 | 21 | 2,523 | 79 |
| 1981 | 1,653 | 767 | 46 | 886 | 54 |
| 1982 | 3,715 | 335 | 9 | 3,380 | 91 |
| 1983 | 4,348 | 52 | 1 | 4,296 | 99 |
| 1984 | 2,828 | 236 | 8 | 2,592 | 92 |
| 1985 | 3,119 | 555 | 18 | 2,564 | 82 |
| 1986 | 928 | 87 | 9 | 841 | 91 |
| 1987 | 1,849 | 401 | 22 | 1,448 | 78 |
| 1988 | 964 | 109 | 11 | 855 | 89 |
| 1989 | 1,861 | 327 | 18 | 1,534 | 82 |
| 1990 | 1,528 | 44 | 3 | 1,484 | 97 |
| 1991 | 1,360 | 64 | 5 | 1,296 | 95 |
| 1992 | 1,163 | 16 | 1 | 1,147 | 99 |
| MEAN | 2,127 | 325 | 15 | 1,802 | 85 |

[a] All of the harvest in both regulatory areas occurs in fresh water.

Appendix A9. Number of smelt harvested by sport anglers fishing KMA waters, 1977-1991.

| Year | KMA Total | Alaska Peninsula & Aleutian Island | | Kodiak Island | |
|---|---|---|---|---|---|
| | | Harvest | % of KMA | Harvest | % of KMA |
| 1977 | 9,969 | 4,317 | 43 | 5,652 | 57 |
| 1978 | 4,523 | 4,523 | 100 | 0 | 0 |
| 1979 | 2,515 | 1,572 | 63 | 943 | 38 |
| 1980 | 4,103 | 2,011 | 49 | 2,092 | 51 |
| 1981 | 3,024 | 864 | 29 | 2,160 | 71 |
| 1982 | 2,620 | 0 | 0 | 2,620 | 100 |
| 1983 | 0 | 0 | 0 | 0 | 0 |
| 1984 | 96 | 96 | 100 | 0 | 0 |
| 1985 | 25 | 0 | 0 | 25 | 100 |
| 1986 | 0 | 0 | 0 | 0 | 0 |
| 1987 | 462 | 0 | 0 | 462 | 100 |
| 1988 | 0 | 0 | 0 | 0 | 0 |
| 1989 | 0 | 0 | 0 | 0 | 0 |
| 1990 | 0 | 0 | 0 | 0 | 0 |
| 1991 | 0 | 0 | 0 | 0 | 0 |
| MEAN | 1,907 | 963 | 43 | 943 | 49 |

Appendix A10. Number of chinook salmon harvested by sport anglers fishing Kodiak Management Area waters, 1977-1992.

| | | Alaska Peninsula/Aleutian Island Regulatory Area | | | | | | Kodiak Island Regulatory Area | | | | | |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| | | Salt Water | | Fresh Water | | Area Total | | Salt Water | | Fresh Water | | Area Total | |
| Year | KMA Total | Harvest | Percent | Harvest | Percent | Total | % of KMA | Harvest | Percent | Harvest | Percent | Total | % of KMA |
| 1977 | 1,113 | | | | | 630 | 57 | 34 | 7 | 449 | 93 | 483 | 43 |
| 1978 | 583 | | | | | 233 | 40 | 12 | 3 | 338 | 97 | 350 | 60 |
| 1979 | 1,176 | | | | | 424 | 36 | 98 | 13 | 654 | 87 | 752 | 64 |
| 1980 | 723 | | | | | 396 | 55 | 60 | 18 | 267 | 82 | 327 | 45 |
| 1981 | 1,264 | 129 | 28 | 346 | 73 | 475 | 38 | 194 | 25 | 595 | 75 | 789 | 62 |
| 1982 | 2,576 | 1,351 | 93 | 105 | 7 | 1,456 | 57 | 167 | 15 | 953 | 85 | 1,120 | 44 |
| 1983 | 1,295 | 493 | 87 | 73 | 13 | 566 | 44 | 198 | 27 | 531 | 3 | 729 | 56 |
| 1984 | 1,196 | 112 | 41 | 163 | 59 | 275 | 23 | 210 | 23 | 711 | 77 | 921 | 77 |
| 1985 | 1,133 | 0 | 0 | 371 | 100 | 371 | 33 | 162 | 21 | 600 | 79 | 762 | 67 |
| 1986 | 830 | 0 | 0 | 310 | 100 | 310 | 37 | 168 | 32 | 352 | 68 | 520 | 63 |
| 1987 | 1,002 | 42 | 7 | 581 | 93 | 623 | 62 | 54 | 14 | 325 | 86 | 379 | 38 |
| 1988 | 2,153 | 31 | 5 | 558 | 95 | 589 | 27 | 145 | 9 | 1,419 | 91 | 1,564 | 73 |
| 1989 | 2,226 | 234 | 21 | 905 | 80 | 1,139 | 51 | 120 | 11 | 967 | 89 | 1,087 | 49 |
| 1990 | 1,156 | 140 | 88 | 20 | 13 | 160 | 14 | 66 | 7 | 930 | 93 | 996 | 86 |
| 1991 | 2,752 | 56 | 23 | 168 | 77 | 244 | 9 | 198 | 8 | 2,310 | 92 | 2,508 | 91 |
| 1992 | 2,671 | 210 | 46 | 244 | 54 | 454 | 17 | 585 | 26 | 1,632 | 74 | 2,217 | 83 |
| MEAN[a] | 1,485 | 233 | 37 | 320 | 64 | 522 | 39 | 155 | 16 | 808 | 84 | 963 | 62 |

[a] Averages for the fresh and saltwater fisheries for the Alaska Peninsula/Aleutian Islands Regulatory Area do not add up to the total average for the regulatory area due to incomplete data for the years 1977 through 1980.

Appendix A11. Number of chum salmon harvested by sport anglers fishing Kodiak Management Area waters, 1977-1992.

| | | Alaska Peninsula/Aleutian Island Regulatory Area | | | | | | Kodiak Island Regulatory Area | | | | | |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| | | Salt Water | | Fresh Water | | Area Total | | Salt Water | | Fresh Water | | Area Total | |
| Year | KMA Total | Harvest | Percent | Harvest | Percent | Total | % of KMA | Harvest | Percent | Harvest | Percent | Total | % of KMA |
| 1977 | 1,869 | | | | | 224 | 12 | 633 | 39 | 1,012 | 62 | 1,645 | 88 |
| 1978 | 1,619 | | | | | 332 | 21 | 624 | 49 | 663 | 52 | 1,287 | 80 |
| 1979 | 591 | | | | | 91 | 15 | 382 | 76 | 118 | 24 | 500 | 85 |
| 1980 | 1,334 | | | | | 809 | 61 | 405 | 77 | 120 | 23 | 525 | 39 |
| 1981 | 1,166 | 335 | 63 | 194 | 37 | 529 | 45 | 151 | 24 | 486 | 76 | 637 | 55 |
| 1982 | 2,567 | 472 | 38 | 771 | 62 | 1,243 | 48 | 639 | 48 | 685 | 52 | 1,324 | 52 |
| 1983 | 963 | 0 | 0 | 147 | 100 | 147 | 15 | 462 | 57 | 354 | 43 | 816 | 85 |
| 1984 | 1,609 | 126 | 44 | 162 | 56 | 288 | 18 | 799 | 61 | 522 | 40 | 1,321 | 82 |
| 1985 | 915 | 0 | 0 | 50 | 100 | 50 | 6 | 167 | 19 | 698 | 81 | 865 | 95 |
| 1986 | 541 | 25 | 12 | 180 | 88 | 205 | 38 | 122 | 36 | 214 | 64 | 336 | 62 |
| 1987 | 792 | 23 | 10 | 209 | 90 | 232 | 29 | 198 | 35 | 362 | 65 | 560 | 71 |
| 1988 | 1,824 | 0 | 0 | 278 | 100 | 278 | 15 | 73 | 5 | 1,473 | 95 | 1,546 | 85 |
| 1989 | 941 | 104 | 34 | 206 | 67 | 310 | 33 | 225 | 36 | 406 | 64 | 631 | 67 |
| 1990 | 412 | 0 | 0 | 221 | 100 | 221 | 54 | 36 | 19 | 155 | 81 | 191 | 46 |
| 1991 | 1,612 | 0 | 0 | 95 | 100 | 95 | 6 | 417 | 27 | 1,100 | 73 | 1,517 | 94 |
| 1992 | 913 | 273 | 95 | 15 | 5 | 288 | 32 | 92 | 15 | 533 | 85 | 625 | 68 |
| MEAN[a] | 1,230 | 114 | 24 | 158 | 76 | 334 | 27 | 339 | 38 | 556 | 63 | 895 | 73 |

[a] Averages for the fresh and saltwater fisheries for the Alaska Peninsula/Aleutian Islands Regulatory Area do not add up to the total average for the regulatory area due to incomplete data for the years 1977 through 1980.

Appendix A12. Number of steelhead trout harvested by sport anglers fishing Kodiak Management Area waters[a], 1977-1992.

| | Kodiak Island Regulatory Area | | | | |
|---|---|---|---|---|---|
| | Salt Water | | Fresh Water | | Area Total |
| Year | Harvest | Percent | Harvest | Percent | Total |
| 1977 | 3 | 1 | 229 | 99 | 232 |
| 1978 | 0 | 0 | 162 | 100 | 162 |
| 1979 | 9 | 3 | 309 | 97 | 318 |
| 1980 | 17 | 3 | 654 | 98 | 671 |
| 1981 | 0 | 0 | 313 | 100 | 313 |
| 1982 | 0 | 0 | 259 | 100 | 258 |
| 1983 | 10 | 3 | 292 | 97 | 302 |
| 1984 | 124 | 18 | 572 | 82 | 696 |
| 1985 | 426 | 54 | 364 | 46 | 790 |
| 1986 | 168 | 52 | 153 | 48 | 321 |
| 1987 | 181 | 72 | 72 | 29 | 253 |
| 1988 | 636 | 75 | 217 | 25 | 853 |
| 1989 | 249 | 32 | 539 | 68 | 788 |
| 1990 | 448 | 40 | 672 | 60 | 1,120 |
| 1991 | 428 | 70 | 185 | 30 | 613 |
| 1992 | 48 | 38 | 80 | 62 | 128 |
| MEAN | 172 | 35 | 316 | 65 | 488 |

[a] No significant harvest occurs in the Alaska Peninsula/ Aleutian Island Regulatory area. All reported harvest is from the Kodiak Island Regulatory area.

Appendix A13. Number of Arctic grayling harvested by sport anglers fishing KMA waters, 1977-1992[a].

| Year | KMA Total | Alaska Peninsula & Aleutian Island | | Kodiak Island | |
|---|---|---|---|---|---|
| | | Harvest | % of KMA | Harvest | % of KMA |
| 1977 | 153 | 99 | 65 | 54 | 35 |
| 1978 | 370 | 45 | 12 | 325 | 88 |
| 1979 | 209 | 82 | 39 | 127 | 61 |
| 1980 | 1,223 | 758 | 62 | 465 | 38 |
| 1981 | 648 | 529 | 82 | 119 | 18 |
| 1982 | 707 | 482 | 68 | 225 | 32 |
| 1983 | 136 | 10 | 7 | 126 | 93 |
| 1984 | 361 | 75 | 21 | 286 | 79 |
| 1985 | 870 | 50 | 6 | 820 | 94 |
| 1986 | 15 | 0 | 0 | 15 | 100 |
| 1987 | 594 | 522 | 88 | 72 | 12 |
| 1988 | 382 | 200 | 52 | 182 | 48 |
| 1989 | 726 | 537 | 74 | 189 | 26 |
| 1990 | 86 | 0 | 0 | 86 | 100 |
| 1991 | 0 | 0 | 0 | 98 | 100 |
| 1992 | 120 | 0 | 0 | 120 | 100 |
| MEAN | 413 | 212 | 36 | 207 | 64 |

[a] All of the harvest in both regulatory areas occurs in fresh water.

Appendix B

Commercial Salmon Harvests
for the KMA

Appendix B1. Commercial harvests (thousands of fish) of pink salmon from KMA waters, 1977-1992.

| YEAR | ALASKA PENINSULA/ALEUTIAN ISLAND AREA | | | | CHIGNIK | KODIAK | GRAND TOTAL |
|---|---|---|---|---|---|---|---|
| | SOUTH PENINSULA | NORTH PENINSULA | ALEUTIAN | AREA TOTAL | | | |
| 1977 | 1,449 | 1 | 0 | 1,450 | 605 | 6,252 | 8,307 |
| 1978 | 5,609 | 467 | 38 | 6,114 | 985 | 15,004 | 22,103 |
| 1979 | 6,571 | 5 | 539 | 7,115 | 2,057 | 11,287 | 20,459 |
| 1980 | 7,962 | 302 | 2,598 | 10,861 | 1,126 | 17,290 | 29,278 |
| 1981 | 5,036 | 11 | 303 | 5,350 | 1,163 | 10,337 | 16,850 |
| 1982 | 6,735 | 12 | 1,448 | 8,195 | 876 | 8,076 | 17,147 |
| 1983 | 2,828 | 3 | 2 | 2,833 | 321 | 4,603 | 7,757 |
| 1984 | 11,589 | 27 | 2,310 | 13,926 | 446 | 10,884 | 25,256 |
| 1985 | 4,434 | 3 | 0 | 4,437 | 175 | 7,335 | 11,947 |
| 1986 | 4,032 | 23 | 43 | 4,097 | 647 | 11,504 | 16,249 |
| 1987 | 1,209 | 4 | 0 | 1,212 | 247 | 5,073 | 6,533 |
| 1988 | 7,045 | 65 | 183 | 7,293 | 2,997 | 14,262 | 24,552 |
| 1989 | 7,293 | 4 | 7 | 7,304 | 888 | 22,649 | 30,841 |
| 1990 | 2,866 | 518 | 283 | 3,666 | 555 | 5,984 | 10,206 |
| 1991 | 10,616 | 4 | 0 | 10,620 | 1,169 | 16,643 | 28,432 |
| 1992 | 9,770 | 194 | 312 | 10,276 | 1,554 | 3,311 | 15,141 |
| MEAN | 5,940 | 103 | 504 | 6,547 | 988 | 10,656 | 18,191 |
| ODD MEAN | 4,929 | 4 | 106 | 5,040 | 828 | 10,522 | 16,390 |
| EVEN MEAN | 6,951 | 201 | 902 | 8,057 | 1,148 | 10,790 | 19,991 |

Appendix B2. Commercial harvests (thousands of fish) of coho salmon from KMA waters, 1977-1992.

| YEAR | ALASKA PENINSULA/ALEUTIAN ISLAND AREA | | | | CHIGNIK | KODIAK | GRAND TOTAL |
|---|---|---|---|---|---|---|---|
| | SOUTH PENINSULA | NORTH PENINSULA | ALEUTIAN | AREA TOTAL | | | |
| 1977 | 2 | 34 | 0 | 36 | 17 | 28 | 82 |
| 1978 | 61 | 63 | 0 | 124 | 20 | 49 | 193 |
| 1979 | 356 | 113 | 0 | 469 | 93 | 141 | 704 |
| 1980 | 274 | 128 | 0 | 402 | 118 | 139 | 659 |
| 1981 | 162 | 155 | 0 | 318 | 79 | 122 | 519 |
| 1982 | 256 | 238 | 0 | 494 | 300 | 344 | 1,138 |
| 1983 | 128 | 75 | 0 | 203 | 62 | 158 | 423 |
| 1984 | 309 | 199 | 0 | 508 | 110 | 230 | 848 |
| 1985 | 173 | 168 | 0 | 341 | 207 | 284 | 832 |
| 1986 | 236 | 164 | 0 | 400 | 117 | 168 | 685 |
| 1987 | 225 | 172 | 0 | 397 | 150 | 192 | 739 |
| 1988 | 506 | 234 | 0 | 740 | 370 | 303 | 1,413 |
| 1989 | 444 | 228 | 0 | 672 | 67 | 141 | 880 |
| 1990 | 307 | 193 | 0 | 500 | 130 | 294 | 924 |
| 1991 | 317 | 217 | 0 | 534 | 166 | 325 | 1,025 |
| 1992 | 418 | 207 | 0 | 625 | 311 | 280 | 1,216 |
| MEAN | 261 | 162 | 0 | 423 | 145 | 200 | 769 |

Appendix B3. Commercial harvests (thousands of fish) of sockeye salmon from KMA waters, 1977-1992.

| YEAR | ALASKA PENINSULA/ALEUTIAN ISLAND AREA | | | | CHIGNIK | KODIAK | GRAND TOTAL |
|---|---|---|---|---|---|---|---|
| | SOUTH PENINSULA | NORTH PENINSULA | ALEUTIAN | AREA TOTAL | | | |
| 1977 | 312 | 471 | 0 | 783 | 1,972 | 623 | 3,378 |
| 1978 | 580 | 896 | 2 | 1,478 | 1,576 | 1,072 | 4,126 |
| 1979 | 1,150 | 1,980 | 12 | 3,142 | 1,064 | 632 | 4,838 |
| 1980 | 3,614 | 1,397 | 9 | 5,020 | 846 | 651 | 6,517 |
| 1981 | 2,255 | 1,845 | 5 | 4,105 | 1,840 | 1,289 | 7,234 |
| 1982 | 2,346 | 1,435 | 3 | 3,784 | 1,522 | 1,205 | 6,511 |
| 1983 | 2,557 | 2,093 | 4 | 4,654 | 1,823 | 1,232 | 7,709 |
| 1984 | 2,318 | 1,735 | 67 | 4,120 | 2,662 | 1,951 | 8,733 |
| 1985 | 2,215 | 2,601 | 3 | 4,819 | 946 | 1,843 | 7,608 |
| 1986 | 1,223 | 2,437 | 8 | 3,668 | 1,646 | 3,155 | 8,469 |
| 1987 | 1,450 | 1,209 | 0 | 2,659 | 1,899 | 1,793 | 6,351 |
| 1988 | 1,473 | 1,528 | 4 | 3,005 | 796 | 2,698 | 6,499 |
| 1989 | 2,661 | 1,719 | 8 | 4,388 | 1,157 | 2,629 | 8,174 |
| 1990 | 2,387 | 2,416 | 12 | 4,815 | 2,094 | 5,248 | 12,157 |
| 1991 | 2,322 | 2,392 | 1 | 4,715 | 1,896 | 5,704 | 12,315 |
| 1992 | 3,446 | 3,575 | 3 | 7,024 | 1,277 | 4,168 | 12,469 |
| MEAN | 2,018 | 1,858 | 9 | 3,886 | 1,564 | 2,243 | 7,692 |

Appendix B4. Commercial harvests (thousands of fish) of chinook salmon from KMA waters, 1977-1992.

| YEAR | ALASKA PENINSULA/ALEUTIAN ISLAND AREA | | | | CHIGNIK | KODIAK | GRAND TOTAL |
|---|---|---|---|---|---|---|---|
| | SOUTH PENINSULA | NORTH PENINSULA | ALEUTIAN | AREA TOTAL | | | |
| 1977 | 0 | 6 | 0 | 6 | 1 | 1 | 8 |
| 1978 | 1 | 14 | 0 | 15 | 2 | 3 | 20 |
| 1979 | 2 | 17 | 0 | 19 | 1 | 2 | 22 |
| 1980 | 5 | 17 | 0 | 22 | 2 | 1 | 25 |
| 1981 | 10 | 18 | 0 | 28 | 3 | 1 | 32 |
| 1982 | 10 | 30 | 0 | 40 | 5 | 1 | 46 |
| 1983 | 27 | 30 | 0 | 57 | 6 | 4 | 67 |
| 1984 | 9 | 23 | 0 | 32 | 4 | 5 | 41 |
| 1985 | 8 | 24 | 0 | 32 | 2 | 5 | 39 |
| 1986 | 6 | 12 | 0 | 18 | 3 | 4 | 25 |
| 1987 | 9 | 14 | 0 | 23 | 3 | 5 | 31 |
| 1988 | 11 | 17 | 0 | 28 | 7 | 22 | 57 |
| 1989 | 7 | 11 | 0 | 18 | 4 | 5 | 27 |
| 1990 | 17 | 12 | 0 | 29 | 10 | 19 | 58 |
| 1991 | 8 | 9 | 0 | 17 | 3 | 22 | 42 |
| 1992 | 8 | 13 | 0 | 21 | 11 | 24 | 56 |
| MEAN | 9 | 17 | 0 | 26 | 4 | 8 | 37 |

Appendix B5. Commercial harvests (thousands of fish) of chum salmon from KMA waters, 1977-1992.

| YEAR | ALASKA PENINSULA/ALEUTIAN ISLAND AREA | | | | CHIGNIK | KODIAK | GRAND TOTAL |
|---|---|---|---|---|---|---|---|
| | SOUTH PENINSULA | NORTH PENINSULA | ALEUTIAN | AREA TOTAL | | | |
| 1977 | 243 | 129 | 0 | 372 | 111 | 1,072 | 1,555 |
| 1978 | 547 | 163 | 0 | 710 | 121 | 814 | 1,645 |
| 1979 | 483 | 66 | 0 | 549 | 188 | 358 | 1,095 |
| 1980 | 1,351 | 700 | 5 | 2,056 | 313 | 1,076 | 3,445 |
| 1981 | 1,770 | 707 | 7 | 2,484 | 580 | 1,345 | 4,409 |
| 1982 | 2,273 | 331 | 6 | 2,610 | 390 | 1,266 | 4,266 |
| 1983 | 1,707 | 349 | 11 | 2,067 | 159 | 1,085 | 3,311 |
| 1984 | 1,657 | 797 | 34 | 2,487 | 63 | 649 | 3,200 |
| 1985 | 1,393 | 671 | 14 | 2,078 | 26 | 431 | 2,535 |
| 1986 | 1,750 | 271 | 39 | 2,060 | 177 | 1,126 | 3,363 |
| 1987 | 1,376 | 369 | 0 | 1,745 | 127 | 682 | 2,554 |
| 1988 | 1,905 | 394 | 1 | 2,300 | 267 | 1,426 | 3,993 |
| 1989 | 994 | 157 | 0 | 1,151 | 2 | 836 | 1,989 |
| 1990 | 1,238 | 126 | 1 | 1,365 | 270 | 577 | 2,212 |
| 1991 | 1,587 | 191 | 0 | 1,778 | 261 | 1,029 | 3,068 |
| 1992 | 1,317 | 342 | 1 | 1,660 | 222 | 680 | 2,562 |
| MEAN | 1,231 | 360 | 8 | 1,717 | 205 | 903 | 2,825 |

Appendix C

Commercial Salmon Harvests within the
Kodiak Road System Zone 1980-1993

Appendix C. Commercial harvests of salmon from stat areas along the Kodiak road system, 1980-1993.

| | 1980 | | | | | 1983 | | | | |
|---|---|---|---|---|---|---|---|---|---|---|
| STAT AREA | Chinook | Sockeye | Coho | Pink | Chum | Chinook | Sockeye | Coho | Pink | Chum |
| 259-10 (Monashka) | 0 | 9 | 275 | 15,743 | 1,798 | 3 | 292 | 330 | 13,878 | 519 |
| 22 (Womens Bay) | 4 | 2 | 543 | 37,055 | 6,683 | 29 | 212 | 886 | 46,923 | 3,940 |
| 23 (Middle Bay) | 0 | 4 | 433 | 16,644 | 4,047 | 2 | 11 | 73 | 8,775 | 749 |
| 24 (Kalsin Bay) | 36 | 14 | 6,069 | 211,390 | 17,076 | 65 | 238 | 766 | 58,957 | 4,542 |
| 25 (Chiniak Pt) | 0 | 0 | 75 | 6,536 | 3,455 | 90 | 479 | 2,068 | 17,244 | 984 |
| 21 (Outer) | 0 | 1 | 837 | 14,100 | 2,338 | 32 | 282 | 2,614 | 48,103 | 1,071 |
| Chiniak Bay Total | 40 | 30 | 8,232 | 301,468 | 35,397 | 221 | 1,514 | 6,737 | 193,880 | 11,805 |
| 259-41 (Pasagshak/ Saltery) | 2 | 315 | 1,832 | 44,674 | 18,879 | 140 | 5,727 | 2,316 | 20,175 | 24,036 |

| | 1981 | | | | | 1984 | | | | |
|---|---|---|---|---|---|---|---|---|---|---|
| STAT AREA | Chinook | Sockeye | Coho | Pink | Chum | Chinook | Sockeye | Coho | Pink | Chum |
| 259-10 (Monashka) | 15 | 59 | 290 | 34,942 | 1,542 | 0 | 738 | 1,240 | 9,843 | 1,313 |
| 22 (Womens Bay) | 1 | 29 | 1,106 | 60,684 | 9,847 | 3 | 302 | 5,282 | 51,510 | 3,983 |
| 23 (Middle Bay) | 0 | 30 | 30 | 22,204 | 5,905 | 0 | 153 | 2 | 2,507 | 115 |
| 24 (Kalsin Bay) | 58 | 116 | 1,366 | 156,663 | 19,063 | 4 | 48 | 4,252 | 18,580 | 3,455 |
| 25 (Chiniak Pt.) | 1 | 200 | 644 | 98,895 | 3,408 | 0 | 3 | 192 | 9,097 | 81 |
| 21 (Outer) | 0 | 61 | 1,197 | 43,532 | 2,122 | 10 | 491 | 3,580 | 37,464 | 1,857 |
| Chiniak Bay Total | 75 | 495 | 4,633 | 416,920 | 41,887 | 17 | 1,735 | 14,548 | 129,001 | 10,804 |
| 259-41 (Pasagshak/ Saltery) | 71 | 21,792 | 1,048 | 220,819 | 83,607 | 189 | 16,937 | 1,485 | 20,169 | 13,748 |

| | 1982 | | | | | 1985 | | | | |
|---|---|---|---|---|---|---|---|---|---|---|
| STAT AREA | Chinook | Sockeye | Coho | Pink | Chum | Chinook | Sockeye | Coho | Pink | Chum |
| 259-10 (Monashka) | 4 | 370 | 495 | 60,272 | 4,210 | 1 | 205 | 86 | 292 | 620 |
| 22 (Womens Bay) | 6 | 252 | 5,245 | 153,342 | 9,566 | 3 | 75 | 666 | 101,537 | 6,513 |
| 23 (Middle Bay) | 8 | 5 | 121 | 10,652 | 8,094 | 0 | 12 | 298 | 7,915 | 1,599 |
| 24 (Kalsin Bay) | 51 | 45 | 1,839 | 100,775 | 12,302 | 9 | 44 | 332 | 18,425 | 6,649 |
| 25 (Chiniak Pt.) | 4 | 22 | 700 | 26,709 | 1,458 | 1 | 1 | 3 | 2,741 | 2,469 |
| 21 (Outer) | 0 | 59 | 3,105 | 71,919 | 858 | 1 | 272 | 1,523 | 72,499 | 2,514 |
| Chiniak Bay Total | 73 | 753 | 11,505 | 423,669 | 36,488 | 15 | 609 | 2,908 | 203,409 | 20,364 |
| 259-41 (Pasagshak/ Saltery) | 10 | 2,747 | 2,787 | 794 | 6,802 | 23 | 3,508 | 1,619 | 2,465 | 589 |

-continued-

| STAT AREA | 1986 Chinook | Sockeye | Coho | Pink | Chum | 1989 Chinook | Sockeye | Coho | Pink | Chum |
|---|---|---|---|---|---|---|---|---|---|---|
| 259-10 (Monashka) | 0 | 1,522 | 77 | 24,694 | 1,320 | | | | | |
| 22 (Womens Bay) | 3 | 106 | 1,065 | 48,689 | 6,463 | EXXON VALDEZ OIL SPILL/NO COMMERCIAL HARVEST | | | | |
| 23 (Middle Bay) | 0 | 1 | 71 | 629 | 2,073 | | | | | |
| 24 (Kalsin Bay) | 0 | 3 | 447 | 15,333 | 1,185 | | | | | |
| 25 (Chiniak Pt.) | 0 | 0 | 0 | 0 | 0 | | | | | |
| 21 (Outer) | 0 | 214 | 181 | 12,955 | 182 | | | | | |
| Chiniak Bay Total | 3 | 1,846 | 1,841 | 102,300 | 11,223 | | | | | |
| 259-41 (Pasagshak/ Saltery) | 130 | 16,203 | 1,189 | 1,036 | 3,217 | | | | | |

| STAT AREA | 1987 Chinook | Sockeye | Coho | Pink | Chum | 1990 Chinook | Sockeye | Coho | Pink | Chum |
|---|---|---|---|---|---|---|---|---|---|---|
| 259-10 (Monashka) | 0 | 3,251 | 916 | 30,959 | 2,492 | 0 | 0 | 0 | 4,311 | 30 |
| 22 (Womens Bay) | 1 | 256 | 2,334 | 136,068 | 9,463 | 2 | 17 | 1 | 3,157 | 1,242 |
| 23 (Middle Bay) | 1 | 147 | 359 | 52,766 | 9,311 | 4 | 3 | 1 | 7,689 | 2,033 |
| 24 (Kalsin Bay) | 16 | 17 | 3,310 | 36,654 | 6,183 | 11 | 0 | 7 | 10,847 | 556 |
| 25 (Chiniak Pt.) | 0 | 1 | 235 | 5,665 | 139 | 0 | 0 | 0 | 0 | 0 |
| 21 (Outer) | 1 | 16 | 6,330 | 14,555 | 1,822 | 10 | 494 | 91 | 5,436 | 1,822 |
| Chiniak Bay Total | 19 | 3,688 | 13,489 | 276,657 | 29,410 | 27 | 514 | 100 | 31,440 | 5,683 |
| 259-41 (Pasagshak/ Saltery) | 202 | 3,405 | 9,425 | 5,962 | 5,408 | 410 | 12,595 | 46 | 5,870 | 2,508 |

| STAT AREA | 1988 Chinook | Sockeye | Coho | Pink | Chum | 1991 Chinook | Sockeye | Coho | Pink | Chum |
|---|---|---|---|---|---|---|---|---|---|---|
| 259-10 (Monashka) | 6 | 244 | 319 | 89,121 | 3,616 | 0 | 92 | 73 | 350 | 30 |
| 22 (Womens Bay) | 6 | 92 | 254 | 118,140 | 17,290 | 2 | 16 | 15 | 21,781 | 1,143 |
| 23 (Middle Bay) | 13 | 8 | 89 | 26,493 | 19,966 | 7 | 1 | 4 | 23,261 | 4,391 |
| 24 (Kalsin Bay) | 61 | 89 | 1,773 | 59,461 | 10,148 | 49 | 534 | 178 | 68,380 | 3,671 |
| 25 (Chiniak Pt. | 23 | 9 | 345 | 38,691 | 11,973 | 218 | 13,153 | 5,630 | 86,842 | 14,291 |
| 21 (Outer) | 26 | 289 | 1,349 | 87,339 | 8,687 | 7 | 609 | 607 | 95,824 | 3,691 |
| Chiniak Bay Total | 135 | 731 | 4,129 | 419,245 | 71,680 | 283 | 14,405 | 6,507 | 296,438 | 27,217 |
| 259-41 (Pasagshak/ Saltery) | 10 | 2,747 | 2,787 | 794 | 6,802 | 180 | 6,787 | 94 | 20,143 | 5,885 |

-continued-

Appendix D

Subsistence Salmon Harvests within the
Kodiak Road System Zone 1980-1992

Appendix C. (Page 3 of 3).

| | 1992 | | | | |
|---|---|---|---|---|---|
| STAT AREA | Chinook | Sockeye | Coho | Pink | Chum |
| 259-10 (Monashka) | 0 | 1,625 | 97 | 760 | 196 |
| 22 (Womens Bay) | 0 | 0 | 0 | 138 | 17 |
| 23 (Middle Bay) | 0 | 0 | 0 | 567 | 392 |
| 24 (Kalsin Bay) | 0 | 0 | 0 | 57 | 0 |
| 25 (Chiniak Pt.) | 144 | 48,228 | 6,604 | 32,028 | 15,223 |
| 21 (Outer) | 15 | 3,086 | 369 | 2,021 | 1,184 |
| Chiniak Bay Total | 159 | 52,939 | 7,070 | 35,571 | 17,012 |
| 259-41 (Pasagshak/ Saltery) | 27 | 5,900 | 222 | 1,992 | 3,751 |

| | 1993 | | | | |
|---|---|---|---|---|---|
| STAT AREA | Chinook | Sockeye | Coho | Pink | Chum |
| 259-10 (Monashka) | 0 | 0 | 0 | 0 | 0 |
| 22 (Womens Bay) | 1 | 9 | 7 | 2,045 | 22 |
| 23 (Middle Bay) | 1 | 1 | 73 | 116,360 | 759 |
| 24 (Kalsin Bay) | 5 | 26 | 40 | 97,652 | 325 |
| 25 (Chiniak Pt.) | 27 | 2,864 | 969 | 168,770 | 1,363 |
| 21 (Outer) | 11 | 3,941 | 544 | 64,055 | 525 |
| Chiniak Bay Total | 45 | 6,841 | 1,633 | 448,882 | 2,994 |
| 259-41 (Pasagshak/ Saltery) | 281 | 34,638 | 714 | 107,668 | 599 |

Appendix D. Subsistence harvests of salmon from locations along the Kodiak road system, 1980-1992.

1980

| AREA | Chinook | Sockeye | Coho | Pink | Chum |
|---|---|---|---|---|---|
| Monashka Bay | 0 | 36 | 68 | 138 | 11 |
| Womens Bay | 0 | 30 | 144 | 94 | 2 |
| Middle Bay | 0 | 0 | 8 | 4 | 52 |
| Kalsin Bay | 2 | 13 | 0 | 18 | 1 |
| Buskin River | 17 | 4,279 | 1,239 | 751 | 94 |
| Chiniak | 13 | 153 | 256 | 332 | 56 |
| Roslyn Creek | 0 | 10 | 137 | 45 | 20 |
| Isthmus Pt. | 0 | 0 | 21 | 5 | 5 |
| Cliff Pt. | 0 | 8 | 29 | 31 | 6 |
| Chiniak Bay Total | 32 | 4,529 | 1,902 | 1,418 | 247 |
| Saltery | 0 | 68 | 0 | 27 | 0 |
| Pasagshak | 0 | 0 | 18 | 23 | 0 |

(Permits returned island wide 756 = 61%
Permits issued island wide 1,239)

1981

| AREA | Chinook | Sockeye | Coho | Pink | Chum |
|---|---|---|---|---|---|
| Monashka Bay | 0 | 15 | 5 | 95 | 32 |
| Womens Bay | 0 | 38 | 20 | 174 | 53 |
| Middle Bay | 0 | 4 | 1 | 28 | 19 |
| Kalsin Bay | 0 | 4 | 152 | 142 | 8 |
| Buskin River | 1 | 4,742 | 860 | 533 | 45 |
| Chiniak | 3 | 368 | 306 | 123 | 16 |
| Roslyn Creek | 0 | 0 | 88 | 15 | 3 |
| Isthmus Pt. | 0 | 0 | 0 | 0 | 0 |
| Cliff Pt. | 0 | 28 | 0 | 1 | 2 |
| Chiniak Bay Total | 4 | 5,199 | 1,432 | 1,111 | 178 |
| Saltery | 0 | 3 | 1 | 1 | 0 |
| Pasagshak | 0 | 28 | 16 | 21 | 0 |

(Permits returned island wide 733 = 63%
Permits issued island wide 1,166)

1982

| AREA | Chinook | Sockeye | Coho | Pink | Chum |
|---|---|---|---|---|---|
| Monashka Bay | 0 | 36 | 76 | 31 | 3 |
| Womens Bay | 0 | 131 | 115 | 192 | 23 |
| Middle Bay | 0 | 13 | 95 | 110 | 10 |
| Kalsin Bay | 0 | 66 | 279 | 180 | 24 |
| Buskin River | 22 | 6,748 | 1,754 | 1,340 | 87 |
| Chiniak | 0 | 25 | 470 | 168 | 46 |
| Roslyn Creek | 0 | 0 | 245 | 37 | 0 |
| Isthmus Pt. | 0 | 0 | 0 | 0 | 0 |
| Cliff Pt. | 0 | 0 | 0 | 0 | 0 |
| Chiniak Bay Total | 22 | 7,019 | 3,034 | 2,058 | 193 |
| Saltery | 0 | 0 | 42 | 0 | 0 |
| Pasagshak | 1 | 83 | 17 | 18 | 0 |

(Permits returned island wide 993 = 78%
Permits issued island wide 1,276)

1983

| AREA | Chinook | Sockeye | Coho | Pink | Chum |
|---|---|---|---|---|---|
| Monashka Bay | 0 | 37 | 11 | 36 | 14 |
| Womens Bay | 0 | 44 | 106 | 241 | 36 |
| Middle Bay | 0 | 90 | 43 | 77 | 10 |
| Kalsin Bay | 1 | 27 | 64 | 60 | 12 |
| Buskin River | 11 | 5,690 | 1,470 | 672 | 66 |
| Chiniak | 0 | 40 | 427 | 154 | 37 |
| Roslyn Creek | 0 | 0 | 20 | 8 | 3 |
| Isthmus Pt. | 0 | 0 | 6 | 0 | 0[a] |
| Cliff Pt. | | | 21 | 1 | 0 |
| Chiniak Bay Total | 12 | 5,928 | 2,168 | 1,249 | 178 |
| Saltery | | | 4 | | 5 |
| Pasagshak | 5 | 365 | 20 | 10 | |

(Permits returned island wide 1,082 = 83%
Permits issued island wide 1,307)

1984

| AREA | Chinook | Sockeye | Coho | Pink | Chum |
|---|---|---|---|---|---|
| Monashka Bay | 0 | 45 | 156 | 42 | 8 |
| Womens Bay | 0 | 6 | 91 | 83 | 21 |
| Middle Bay | 0 | 0 | 0 | 0 | 0 |
| Kalsin Bay | 1 | 8 | 445 | 68 | 38 |
| Buskin River | 26 | 565 | 109 | 29 | 10 |
| Chiniak | 1 | 0 | 249 | 69 | 64 |
| Roslyn Creek | 0 | 0 | 100 | 37 | 10 |
| Isthmus Pt. | 0 | 0 | 0 | 0 | 0 |
| Cliff Pt. | 1 | 0 | 6 | 0 | 0 |
| Chiniak Bay Total | 29 | 624 | 1,156 | 328 | 151 |
| Saltery | 1 | 3 | 44 | 0 | 3 |
| Pasagshak | 13 | 491 | 76 | 12 | 0 |

(Permits returned island wide 1,084 = 87%
Permits issued island wide 1,240)

1985

| AREA | Chinook | Sockeye | Coho | Pink | Chum |
|---|---|---|---|---|---|
| Monashka Bay | 0 | 67 | 113 | 62 | 2 |
| Womens Bay | 2 | 767 | 656 | 162 | 34 |
| Middle Bay | 0 | 1 | 15 | 0 | 0 |
| Kalsin Bay | 0 | 15 | 337 | 153 | 159 |
| Buskin River | 21 | 5,326 | 1,898 | 728 | 117 |
| Chiniak | 0 | 6 | 89 | 13 | 46 |
| Roslyn Creek | 0 | 10 | 221 | 22 | 48 |
| Isthmus Pt. | 2 | 0 | 41 | 0 | 4[a] |
| Cliff Pt. | 0 | 3 | 0 | 0 | 0 |
| Chiniak Bay Total | 25 | 6,195 | 3,370 | 1,140 | 410 |
| Saltery | 1 | 62 | 82 | 35 | 9 |
| Pasagshak | 3 | 163 | 117 | 2 | 0 |

(Permits returned island wide 1,204 = 82%
Permits issued island wide 1,476)

-continued-

1986

| AREA | Permits Returned | Chinook | Sockeye | Coho | Pink | Chum |
|---|---|---|---|---|---|---|
| Monashka Bay | 12 | 0 | 114 | 138 | 58 | 9 |
| Womens Bay | 5 | 0 | 60 | 33 | 0 | 1 |
| Middle Bay | 2 | 0 | 0 | 2 | 14 | 0 |
| Kalsin Bay | 15 | 0 | 29 | 312 | 23 | 35 |
| Buskin River | 362 | 7 | 5,303 | 2,585 | 934 | 110 |
| Chiniak | 7 | 0 | 4 | 90 | 49 | 20 |
| Roslyn Creek | 8 | 0 | 5 | 188 | 5 | 24 |
| Isthmus Pt. | 1 | 0 | 0 | 20 | 0 | 0 |
| Cliff Pt. | 0 | 0 | 0 | 0 | 0 | 0 |
| Chiniak Bay Total | 412 | 7 | 5,515 | 3,368 | 1,083 | 199 |
| Saltery | | 0 | 199 | 91 | 1 | 0 |
| Pasagshak | | 6 | 64 | 35 | 5 | 0 |

(Permits returned island wide 1,080 = 87%
Permits issued island wide 1,243)

1989

| AREA | Permits Returned | Chinook | Sockeye | Coho | Pink | Chum |
|---|---|---|---|---|---|---|
| Monashka Bay | 8 | 1 | 7 | 83 | 31 | 1 |
| Womens Bay | 4 | 0 | 23 | 50 | 0 | 10 |
| Middle Bay | 0 | 0 | 0 | 0 | 0 | 0 |
| Kalsin Bay | 14 | 0 | 4 | 143 | 25 | 7 |
| Buskin River | 206 | 5 | 3,312 | 1,251 | 425 | 74 |
| Chiniak | 5 | 0 | 35 | 70 | 3 | 10 |
| Roslyn Creek | 10 | 0 | 10 | 262 | 5 | 42 |
| Isthmus Pt. | 2 | 0 | 0 | 6 | 0 | 0 |
| Cliff Pt. | 0 | 0 | 0 | 0 | 0 | 0 |
| Chiniak Bay Total | 249 | 6 | 3,391 | 1,859 | 489 | 144 |
| Saltery | | 0 | 179 | 0 | 3 | 0 |
| Pasagshak | | 0 | 78 | 28 | 22 | 1 |

(Permits returned island wide 687[b])

1987

| AREA | Permits Returned | Chinook | Sockeye | Coho | Pink | Chum |
|---|---|---|---|---|---|---|
| Monashka Bay | 16 | 0 | 23 | 133 | 109 | 20 |
| Womens Bay | 1 | 0 | 0 | 4 | 12 | 7 |
| Middle Bay | 23 | 0 | 144 | 33 | 25 | 4 |
| Kalsin Bay | 18 | 0 | 80 | 379 | 50 | 27 |
| Buskin River | 300 | 61 | 3,375 | 1,743 | 541 | 75 |
| Chiniak | 2 | 0 | 50 | 25 | 2 | 10 |
| Roslyn Creek | 15 | 2 | 23 | 311 | 78 | 46 |
| Isthmus Pt. | 0 | 0 | 0 | 0 | 0 | 0 |
| Cliff Pt. | 1 | 0 | 28 | 0 | 1 | 2 |
| Chiniak Bay Total | 376 | 63 | 3,695 | 2,633 | 817 | 189 |
| Saltery | | 1 | 87 | 67 | 35 | 23 |
| Pasagshak | | 9 | 82 | 51 | 13 | 15 |

(Permits returned island wide 969 = 86%
Permits issued island wide 1,124)

1990

| AREA | Permits Returned | Chinook | Sockeye | Coho | Pink | Chum |
|---|---|---|---|---|---|---|
| Monashka Bay | 15 | 0 | 20 | 167 | 22 | 22 |
| Womens Bay | 8 | 0 | 67 | 36 | 9 | 9 |
| Middle Bay | 2 | 0 | 0 | 14 | 0 | 0 |
| Kalsin Bay | 20 | 1 | 4 | 379 | 61 | 48 |
| Buskin River | 291 | 8 | 3,448 | 1,785 | 325 | 91 |
| Chiniak | 6 | 0 | 112 | 26 | 36 | 3 |
| Roslyn Creek | 12 | 0 | 11 | 249 | 6 | 16 |
| Isthmus Pt. | 0 | 0 | 0 | 0 | 0 | 0 |
| Cliff Pt. | 1 | 0 | 0 | 0 | 10 | 0 |
| Chiniak Bay Total | 355 | 9 | 3,662 | 2,656 | 469 | 189 |
| Saltery | 9 | 14 | 303 | 7 | 3 | 0 |
| Pasagshak | 35 | 3 | 598 | 60 | 11 | 15 |

(Permits returned island wide = 1,176[b])

1988

| AREA | Permits Returned | Chinook | Sockeye | Coho | Pink | Chum |
|---|---|---|---|---|---|---|
| Monashka Bay | 12 | 0 | 40 | 110 | 88 | 2 |
| Womens Bay | 7 | 0 | 0 | 81 | 9 | 25 |
| Middle Bay | 0 | 0 | 0 | 0 | 0 | 0 |
| Kalsin Bay | 13 | 0 | 61 | 209 | 53 | 16 |
| Buskin River | 220 | 30 | 3,099 | 1,475 | 313 | 55 |
| Chiniak | 2 | 0 | 0 | 10 | 0 | 0 |
| Roslyn Creek | 9 | 1 | 0 | 299 | 44 | 37 |
| Isthmus Pt. | 0 | 0 | 0 | 0 | 0 | 0 |
| Cliff Pt. | 0 | 0 | 0 | 0 | 0 | 0 |
| Chiniak Bay Total | 263 | 31 | 3,200 | 2,184 | 507 | 135 |
| Saltery | | 3 | 145 | 17 | 10 | 2 |
| Pasagshak | | 0 | 84 | 0 | 11 | 9 |

(Permits returned island wide 663 = 60%
Permits issued island wide 1,098)

1991

| Permits Returned | Chinook | Sockeye | Coho | Pink | Chum |
|---|---|---|---|---|---|
| | 0 | 15 | 85 | 10 | 3 |
| | 0 | 30 | 24 | 19 | 14 |
| | 0 | 0 | 60 | 3 | 6 |
| | 1 | 6 | 247 | 70 | 57 |
| | 7 | 4,301 | 1,449 | 208 | 56 |
| | 0 | 0 | 37 | 0 | 0 |
| | 0 | 0 | 160 | 39 | 17 |
| | 0 | 0 | 0 | 0 | 0 |
| | 0 | 0 | 10 | 0 | 0 |
| | 8 | 4,352 | 2,072 | 349 | 153 |
| | 2 | 406 | 3 | 27 | 78 |
| | 2 | 1,645 | 216 | 60 | 10 |

(Permits returned island wide = 1,145)

1992

| AREA | Permits Returned | Chinook | Sockeye | Coho | Pink | Chum |
|---|---|---|---|---|---|---|
| Monashka Bay | | 5 | 31 | 202 | 27 | 0 |
| Womens Bay | | 0 | 28 | 64 | 18 | 2 |
| Middle Bay | | 14 | 0 | 0 | 0 | 0 |
| Kalsin Bay | | 0 | 147 | 276 | 21 | 2 |
| Buskin River | | 25 | 3,295 | 1,499 | 267 | 114 |
| Chiniak | | 3 | 48 | 169 | 57 | 16 |
| Roslyn Creek | | 7 | 1 | 236 | 11 | 13 |
| Mayflower | | 0 | 0 | 23 | 0 | 0 |
| Chiniak Bay Total | | 54 | 3,550 | 2,469 | 401 | 147 |
| Saltery | | 2 | 309 | 0 | 6 | 14 |
| Pasagshak | | 5 | 1,499 | 118 | 34 | 7 |

(Permits returned island wide = 851 as of 4/19/93)

[a] Fishing occurred at Mayflower not Isthmus Pt.

[b] Beginning in 1989, 2,900 permits were mailed out to potential subsistence fishermen.

Appendix E

Coho Salmon Escapement Counts within the
Kodiak Road System Zone 1980-1993

Appendix E. Coho salmon escapements[a] into streams along the Kodiak road system, 1980-1993.

| | Monashka | | Pillar | | Buskin | |
|---|---|---|---|---|---|---|
| Year | Number of fish | Date | Number of fish | Date | Number of fish | Date |
| 1980 | 72 | 10/20 | 68 | 10/20 | 1,021 | 10/20 |
| 1981 | 57 | 10/28 | 33 | 10/28 | 919 | 10/28 |
| 1982 | – | – | – | – | 500[b] | 8/27 |
| | | | | | 750[b] | 10/7 |
| 1983 | 24 | 10/20 | 15 | 10/20 | 243 | 10/26 |
| 1984 | – | – | – | – | 1,905 | 9/19 |
| 1985 | 135 | 9/11 | 140 | 10/28 | 9,474[c] | 10/26 |
| 1986 | 172 | 10/17 | 44 | 10/17 | 9,589[c] | 10/2 |
| | | | | | 1,985 | 10/15 |
| | | | | | 1,493 | 10/30 |
| 1987 | 12 | 11/12 | 102 | 11/12 | 11,103[c] | 10/1 |
| | | | | | 559 | 10/29 |
| 1988 | – | – | – | – | 6,182[c] | 9/24 |
| | | | | | 600 | 9/25 |
| 1989 | 150[b] | 9/13 | 25 | 8/30 | 9,930[c] | 10/2 |
| 1990 | 53 | 10/23 | 45 | 10/23 | 6,222[c] | 9/26 |
| | | | | | 734 | 10/20 |
| | | | | | 1,604 | 10/31 |
| 1991 | 55 | 9/18 | 70 | 9/18 | 8,929[c] | 9/28 |
| 1992 | 2 | | 300 | | 6,535[c] | 10/7 |
| 1993 | 145 | 10/5 | 69 | 10/3 | 6,813[c] | 9/30 |

| | Sargent | | Russian | | Salonie | |
|---|---|---|---|---|---|---|
| Year | Number of fish | Date | Number of fish | Date | Number of fish | Date |
| 1980 | 72 | 10/20 | 68 | 10/20 | 1,021 | 10/20 |
| 1981 | 44 | 10/26 | 47 | 10/26 | 919 | 10/28 |
| 1982 | 130 | 11/4 | 87 | 10/28 | 388 | 10/26 |
| 1983 | 16 | 10/24 | 23 | 10/24 | 127 | 10/24 |
| 1984 | 61 | 11/5 | 150[b] | 9/11 | 300[b] | 9/11 |
| 1985 | 87 | 10/28 | 358 | 10/28 | 30[b] | 9/12 |
| | | | | | 189 | 10/31 |
| | | | | | 67 | 10/25 |
| 1986 | 41 | 10/26 | 109 | 10/26 | 29 | 9/3 |
| | | | | | 179 | 9/12 |
| | | | | | 152 | 9/25 |
| 1987 | 24 | 11/12 | 37 | 11/21 | 154 | 10/15 |
| | | | | | 315 | 10/18 |
| | | | | | 49 | 11/19 |
| 1988 | 0 | 8/23 | 0 | 8/23 | 0 | 8/23 |
| 1989 | 0 | 9/12 | 0 | 9/12 | 0 | 9/12 |
| 1990 | 60 | 10/28 | 16 | 10/21 | 142 | 10/21 |
| | | | | | 187 | 11/4 |
| 1991 | – | | – | | – | |
| 1992 | 0[b] | 9/3 | 50[b] | 9/3 | 98 | 10/22 |
| 1993 | 83 | 10/12 | 133 | 10/13 | 274 | 10/18 |
| | | | | | 253 | 10/31 |

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Appendix E. (Page 3 of 4).

| Year | Chiniak | | Pasagshak | | Saltery | |
|---|---|---|---|---|---|---|
| | Number of fish | Date | Number of fish | Date | Number of fish | Date |
| 1980 | 32 | 11/8 | 850 | 8/23 | 212[b] | 11/7 |
| | | | 1,330 | 10/20 | | |
| | | | 1,330 | 11/20 | | |
| 1981 | 170 | 11/2 | 320[b] | 10/21 | 720[b] | 10/21 |
| | | | | | 959 | 11/5 |
| 1982 | 155 | 10/25 | 175 | 10/27 | 400[b] | 10/7 |
| | | | | | 2,176 | 11/2 |
| 1983 | 25 | 10/21 | 1,500[b] | 8/23 | 700[b] | 9/9 |
| | | | 1,920 | 10/28 | | |
| 1984 | 76 | 11/6 | 1,540 | 11/1 | 2,100[b] | 9/10 |
| | | | | | 520[b] | 10/6 |
| 1985 | 66 | 9/24 | 400[b] | 9/6 | 4,022[c] | 9/28 |
| | 86 | 10/28 | 3,000[b] | 10/29 | | |
| 1986 | 48 | 10/20 | 1,998 | 10/14 | 11,009[c] | 9/12 |
| | | | 3,524 | 10/22 | | |
| | | | 3,571 | 10/29 | | |
| 1987 | 15 | 11/9 | 1,023 | 10/18 | 11,376[c] | 10/1 |
| | | | 2,519 | 11/13 | | |
| 1988 | | | 2,000[b] | 8/23 | 4,702[c] | 9/12 |
| 1989 | | | 800[b] | 9/12 | 5,332[c] | 9/26 |
| | | | 1,800[b] | 9/13 | | |
| 1990 | 48 | 11/5 | 303 | 10/15 | 2,847[c] | 9/17 |
| | | | 908 | 10/28 | 268 | 10/29 |
| | | | 2,178 | 11/15 | | |
| | | | | | 187 | 11/4 |
| 1991 | - | | 0 | 10/5 | 747[c] | 9/4 |
| 1992 | - | | 3,000[b] | 9/3 | 1,000[b] | 9/21 |
| | | | 5 | 10/19 | | |
| 1993 | | | 612 | 10/25 | 3,500[b] | 9/13 |
| | | | 1,337 | 11/6 | | |

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Appendix E. (Page 2 of 4).

| | American | | Olds | | Roslyn | | Kalsin | |
|---|---|---|---|---|---|---|---|---|
| Year | Number of fish | Date | Number of fish | Date | Number of fish | Date | Number of fish | Date |
| 1980 | 903 | 10/30 | 780 | 10/28 | 628 | 11/27 | 240 | 11/6 |
| 1981 | 1,130[b] | 10/13 | 800[b] | 10/13 | 360[b] | 10/13 | 166 | 10/27 |
| | 627 | 10/30 | 434 | 10/29 | 314 | 10/22 | | |
| 1982 | 360[b] | 10/7 | 645[b] | 10/7 | 240[b] | 10/7 | 133 | 10/27 |
| | 266 | 10/28 | 1,375 | 10/27 | 525 | 10/25 | | |
| 1983 | 420[b] | 9/22 | 800[b] | 9/22 | 49 | 10/21 | 32 | 11/16 |
| | 114 | 10/25 | 173 | 10/25 | | | | |
| 1984 | 350[b] | 9/11 | 4,500[b] | 8/22 | 76 | 11/6 | | |
| 1985 | 65[b] | 9/20 | 900[b] | 9/20 | 150[b] | 9/5 | 450[b] | 9/5 |
| | 439 | 10/30 | 1,648 | 9/25 | 78[b] | 9/20 | 60[b] | 9/20 |
| | | | | | 93 | 9/24 | | |
| | | | | | 189 | 10/30 | | |
| 1986 | 99 | 9/5 | 1,178 | 9/5 | 358 | 9/4 | 110 | 10/24 |
| | 201 | 9/15 | 1,849 | 9/11 | 342 | 9/10 | | |
| | 221 | 10/24 | 1,549 | 10/17 | 370 | 9/19 | | |
| | | | 1,164 | 10/28 | 306 | 9/25 | | |
| 1987 | 555 | 10/19 | 842 | 10/18 | 280 | 9/14 | 45 | 10/17 |
| | 453 | 11/14 | 683 | 11/14 | 0 | 10/18 | | |
| | | | | | 47 | 11/9 | | |
| 1988 | | | 0 | 8/23 | | | | |
| 1989 | 2,500[b] | 9/13 | 800[b] | 9/13 | 222 | 9/16 | | |
| | | | 769 | 10/28 | 335 | 10/25 | | |
| 1990 | 20 | 9/6 | 15 | 9/6 | 40 | 9/6 | 63 | 10/15 |
| | 419 | 10/19 | 1,706 | 10/17 | 648 | 10/16 | | |
| | 290 | 10/27 | 1,014 | 11/3 | 676 | 10/30 | | |
| | 316 | 11/6 | | | | | | |
| 1991 | - | - | 900[b] | 9/6 | 50[b] | 8/22 | - | |
| | | | 570 | 9/9 | 882 | 10/4 | | |
| 1992 | 600[b] | 9/21 | 950[b] | 9/21 | 100[b] | 9/3 | | |
| | 181 | 10/20 | 320 | 10/18 | 70 | 10/21 | | |
| 1993 | 412 | 10/20 | 525 | 10/5 | 148 | 10/15 | | |
| | | | 474 | 10/31 | 137 | 10/22 | | |

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Appendix E. (Page 4 of 4).

| Year | Miam | | Hurst | |
|---|---|---|---|---|
| | Number of fish | Date | Number of fish | Date |
| 1980 | 200[b] | 8/23 | 218 | 10/31 |
| 1981 | 300[b] | 8/22 | | |
| | 740[b] | 10/21 | | |
| 1982 | 220 | 10/7 | 266 | 11/2 |
| 1983 | 500[b] | 8/31 | 48 | 11/15 |
| | 20[b] | 9/7 | | |
| 1984 | 1,000[b] | 9/10 | 50[b] | 9/10 |
| | 1,050[b] | 10/16 | 339 | 11/8 |
| 1985 | 160 | 9/6 | 55[b] | 9/20 |
| | 1,060[b] | 9/20 | | |
| | 1,500[a] | 10/4 | | |
| 1986 | | | 427 | 10/28 |
| 1988 | 250[b] | 8/30 | | |
| 1989 | 1,400[b] | 9/13 | 0[b] | 9/12 |
| 1990 | | | 372 | 10/29 |
| 1991 | 300[b] | 8/30 | | |
| | 3,500[b] | 9/6 | | |
| 1992 | 1,300[b] | 9/21 | | |
| 1993 | 4,700[b] | 9/13 | | |

[a] All unmarked estimates were documented on foot surveys.

[b] Aerial survey estimates.

[c] Weir counts.

Appendix F

Pink, Sockeye and Chum Salmon Counts within the
Kodiak Road System Zone 1980-1993

Appendix F. Pink, sockeye, and chum salmon peak escapement[a] counts for streams along the Kodiak road system, 1980-1993[b].

| Year | Monashka | | Pillar | | Buskin | | | |
|---|---|---|---|---|---|---|---|---|
| | Pink | Date | Pink | Date | Pink | Date | Sockeye | Date |
| 1980 | 3,300 | 8/25 | 30 | 8/25 | 95,000 | 8/20 | 3,814 | 8/15 |
| 1981 | 1,300 | 8/26 | 400 | 8/26 | 70,000 | 8/28 | 7,846 | 8/14 |
| 1982 | 2,800 | 9/1 | 277 | 9/17 | 120,000 | 8/27 | 3,600 | 8/27 |
| 1983 | 1,100 | 8/31 | 420 | 8/31 | 53,000 | 8/23 | 4,669 | 8/30 |
| 1984 | 4,600 | 8/3 | 500 | 7/31 | 100,000 | 9/11 | 4,875 | 9/11 |
| 1985 | 8,500 | 9/5 | 5,040 | 9/11 | 171,028[b] | | 18,010[b] | |
| 1986 | 5,500 | 9/9 | 6,215 | 9/9 | 98,958 | | 8,939 | |
| 1987 | 225 | 7/21 | 300 | 8/17 | 27,892 | | 12,690 | |
| 1988 | 2,000 | 8/15 | 1,000 | 8/15 | 203,648 | | 12,144 | |
| 1989 | 8,000 | 8/30 | 42,100 | 8/27 | 159,123 | | 17,853 | |
| 1990 | 2,700 | 8/14 | 11,580 | 8/20 | 42,889 | | 10,528 | |
| 1991 | 7,800 | 8/30 | 6,000 | 8/30 | 37,736 | | 9,794 | |
| 1992 | 7,700 | 9/7 | 11,900 | 9/7 | 25,141 | | 9,711 | |
| 1993 | 3,600 | 8/17 | 6,200 | 8/17 | 53,484 | | 9,526 | |

| | Sargent | | | | Russian | | | | Salonie | | | |
|---|---|---|---|---|---|---|---|---|---|---|---|---|
| | Pink | Date | Chum | Date | Pink | Date | Chum | Date | Pink | Date | Chum | Date |
| 1980 | 2,800 | 8/20 | | | 8,000 | 8/20 | 4,000 | 8/20 | 3,000 | 8/20 | 1,400 | 8/20 |
| 1981 | 1,400 | 8/22 | | | 5,600 | 8/22 | 500 | 8/22 | 10,000 | 8/22 | 200 | 8/22 |
| 1982 | 10,000 | 8/27 | 1,500 | 8/27 | 8,000 | 8/11 | 2,000 | 8/11 | 12,000 | 8/27 | 1,000 | 8/11 |
| 1983 | 300 | 8/11 | 50 | 8/11 | 2,000 | 8/23 | 500 | 8/23 | 5,500 | 8/23 | 2,000 | 8/23 |
| 1984 | 1,800 | 9/11 | 100 | 9/11 | 6,000 | 8/10 | 4,800 | 9/11 | 2,800 | 9/11 | 1,100 | 9/11 |
| 1985 | 4,000 | 9/5 | 2,500 | 9/5 | 10,400 | 9/5 | 7,600 | 9/5 | 20,400 | 9/5 | 10,000 | 9/20 |
| 1986 | 3,500 | 8/18 | | | 14,000 | 8/18 | 4,000 | 8/18 | 18,000 | 8/18 | 5,000 | 8/18 |
| 1987 | 300 | 8/25 | | | 18,200 | 8/25 | 10,000 | 9/15 | 1,000 | 8/25 | | |
| 1988 | 19,000 | 8/23 | | | 12,000 | 8/23 | 8,000 | 8/23 | 15,000 | 8/23 | 500 | 8/23 |
| 1989 | 22,000 | 9/12 | | | 36,500 | 9/12 | 1,800 | 9/12 | 113,000 | 9/12 | | |
| 1990 | 4,900 | 8/18 | | | 4,180 | 8/18 | 200 | 8/18 | 4,140 | 8/18 | | |
| 1991 | 250 | 8/2 | | | 900 | 8/12 | | | 9,000 | 8/22 | | |
| 1992 | 1,240 | 9/3 | | | 2,700 | 9/3 | 2,365 | 9/3 | | | | |
| 1993 | 14,500 | 8/9 | | | 17,500 | 8/9 | 700 | 8/9 | 52,500 | 8/9 | | |

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Appendix F. (Page 2 of 3).

| | American | | | | Olds | | | | Roslyn | | | |
|---|---|---|---|---|---|---|---|---|---|---|---|---|
| | Pink | Date | Chum | Date | Pink | Date | Chum | Date | Pink | Date | Chum | Date |
| 1980 | 47,000 | 8/23 | 4,000 | 9/1 | 67,700 | 8/8 | 8,500 | 8/23 | 52,000 | 8/23 | | |
| 1981 | 45,000 | 8/22 | 2,500 | 8/22 | 40,000 | 8/22 | 500 | 8/22 | 1,500 | 7/25 | | |
| 1982 | 36,000 | 8/27 | 3,000 | 8/11 | 60,000 | 8/27 | 2,500 | 8/27 | 30,000 | 8/27 | | |
| 1983 | 64,000 | 9/7 | 10,000 | 9/7 | 27,000 | 8/23 | 11,000 | 9/7 | 2,800 | 9/7 | | |
| 1984 | 30,000 | 8/28 | 8,400 | 9/11 | 31,500 | 8/22 | 15,000 | 8/28 | 17,000 | 8/31 | | |
| 1985 | 140,000 | 9/20 | 10,400 | 9/5 | 65,000 | 9/5 | 8,000 | 8/22 | 7,800 | 9/5 | | |
| 1986 | 21,000 | 8/18 | 4,000 | 8/18 | 52,000 | 8/16 | 3,000 | 8/16 | 27,000 | 8/18 | | |
| 1987 | 112,000 | 8/25 | 800 | 8/12 | 48,100 | 8/25 | 2,600 | 8/12 | 12,000 | 8/25 | | |
| 1988 | 500 | 7/25 | | | 90,000 | 8/23 | 15,000 | 8/23 | 42,000 | 8/23 | | |
| 1989 | 126,000 | 9/25 | 11,000 | 9/25 | 46,000 | 8/30 | 1,400 | 9/13 | 39,400 | 8/30 | 200 | 8/30 |
| 1990 | 22,000 | 8/21 | 8,000 | 8/13 | 21,000 | 8/13 | 1,400 | 8/18 | 39,450 | 8/18 | | |
| 1991 | 49,000 | 8/22 | 12,000 | 8/22 | 22,500 | 8/12 | 2,500 | 8/2 | 23,000 | 8/22 | | |
| 1992 | 17,900 | 9/3 | 4,500 | 9/3 | 24,500 | 9/3 | 3,000 | 8/8 | 9,400 | 8/8 | 123 | 8/14 |
| 1993 | 52,700 | 9/10 | 2,000 | 9/10 | 58,000 | 8/5 | 7,000 | 8/17 | 21,000 | 8/5 | 700 | 8/5 |

| | Chiniak | | Pasagshak | | | | Saltery | | | | | |
|---|---|---|---|---|---|---|---|---|---|---|---|---|
| | Pink | Date | Pink | Date | Sockeye | Date | Pink | Date | Sockeye | Date | Chum | Date |
| 1980 | 5,500 | 8/20 | | | 3,484 | 8/19 | 38,000 | 8/23 | 31,600 | 8/3 | | |
| 1981 | 650 | 7/27 | 2,000 | 8/4 | 2,759 | 8/26 | 57,000 | 8/4 | 43,300 | 8/4 | 7,000 | 8/4 |
| 1982 | 4,500 | 8/25 | | | 5,400 | 8/27 | 25,000 | 8/27 | 28,000 | 7/26 | 8,000 | 8/31 |
| 1983 | 3,000 | 8/23 | 400 | 7/31 | 3,458 | 9/2 | 28,000 | 9/9 | 46,400 | 8/10 | 5,000 | 8/23 |
| 1984 | 11,000 | 8/31 | 3,500 | 8/27 | 3,700 | 8/13 | 28,000 | 8/28 | 120,000 | 7/20 | 10,000 | 8/3 |
| 1985 | 9,700 | 9/6 | 11,000 | 8/6 | 1,700 | 9/4 | 7,107[C] | | 1,890[C] | | 43[C] | |
| 1986 | 7,000 | 8/18 | | | 3,200 | 8/18 | 23,011 | | 38,314 | | 203 | |
| 1987 | 9,400 | 8/10 | 2,000 | 8/12 | 14,000 | 8/12 | 39,687 | | 22,705 | | 121 | |
| 1988 | - | | 2,000 | 8/23 | 20,000 | 8/23 | 7,646 | | 25,654 | | 28 | |
| 1989 | - | | 2,000 | 9/13 | 14,300 | 9/13 | 214,541 | | 30,937 | | 14 | |
| 1990 | 22,550 | 8/18 | | | 4,680 | 9/28 | 313 | | 29,541 | | 9 | |
| 1991 | 10,000 | 8/2 | 2,000 | 9/6 | 25,000 | 8/30 | 33,812 | | 52,577 | | 18 | |
| 1992 | 4,500 | 9/3 | 500 | 9/3 | 3,590 | 9/3 | 5,800 | | 44,450 | | 250 | |
| 1993 | 74,000 | 8/5 | 300 | 7/15 | 16,000 | 7/15 | 92,078 | | 77,186 | | 5,000 | 9/13 |

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Appendix F. (Page 3 of 3).

| | Miam | | | | Hurst | |
|---|---|---|---|---|---|---|
| | Pink | Date | Sockeye | Date | Pink | Date |
| 1980 | 16,000 | 8/3 | 300 | 7/13 | 10,000 | 8/8 |
| 1981 | 12,280 | 8/22 | | | 6,000 | 8/22 |
| 1982 | 20,000 | 8/17 | 200 | 8/27 | 5,000 | 8/27 |
| 1983 | 16,000 | 8/31 | 800 | 8/10 | 3,500 | 8/23 |
| 1984 | 21,000 | 8/27 | 1,500 | 7/29 | 1,000 | 8/27 |
| 1985 | 39,800 | 8/6 | | | 1,500 | 8/27 |
| 1986 | 19,000 | 8/18 | | | 9,000 | 8/18 |
| 1987 | 19,800 | 8/12 | 700 | 8/25 | 11,100 | 8/25 |
| 1988 | 8,000 | 8/30 | 1,200 | 8/30 | 5,600 | 8/30 |
| 1989 | 40,000 | 9/11 | 950 | 9/12 | 96,000 | 8/26 |
| 1990 | 9,970 | 8/14 | 1,900 | 8/13 | 6,700 | 8/20 |
| 1991 | 43,000 | 9/6 | 2,300 | 8/30 | 15,450 | 8/22 |
| 1992 | 4,400 | 9/3 | 270 | 8/5 | 3,800 | 8/8 |
| 1993 | 25,000 | 8/23 | 1,200 | 8/23 | | |

[a] These figures represent the largest aerial survey count of the year and not an estimate of total escapement. Dates for surveys are provided because during some years a stream may only be flown once, possibly before or after the run has started. In these cases the dates will show that the low peak count was due to the date it was flown and not necessarily the low abundance of fish.

[b] Aerial surveys unless otherwise noted.

[c] 1985-1990 are weir counts. Does not include fish spawning below the weir.

Appendix G

Time of entry tables for:

Buskin River Sockeye Salmon
Buskin River Pink Salmon
Buskin River Coho Salmon
Karluk River Chinook Salmon
Ayakulik River Chinook Salmon
Chignik River Chinook Salmon

Appendix G1. Immigration of sockeye salmon through the Buskin River weir, 1985-1993.

| | 1985 | | 1986 | | 1987 | | 1988 | | 1989 | | 1990 [a] | | 1991 | | 1992 | | 1993 | | 1985-90 |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| Date | No. | % | No. | % | No. | % | No. | % | No. | % | No. | % | No. | % | No. | % | No. | % | Avg. % |
| 20-May | 27 | 0.1 | 4 | 0.0 | 146 | 1.2 | 10 | 0.1 | 0 | 0.0 | 0 | 0.0 | 0 | 0.0 | 0 | 0.0 | 0 | 0.0 | 0.2 |
| 21-May | 27 | 0.1 | 4 | 0.0 | 151 | 1.2 | 11 | 0.1 | 0 | 0.0 | 0 | 0.0 | 0 | 0.0 | 0 | 0.0 | 0 | 0.0 | 0.2 |
| 22-May | 27 | 0.1 | 4 | 0.0 | 156 | 1.2 | 11 | 0.1 | 0 | 0.0 | 0 | 0.0 | 0 | 0.0 | 0 | 0.0 | 0 | 0.0 | 0.2 |
| 23-May | 27 | 0.1 | 4 | 0.0 | 156 | 1.2 | 11 | 0.1 | 1 | 0.0 | 0 | 0.0 | 0 | 0.0 | 0 | 0.0 | 0 | 0.0 | 0.2 |
| 24-May | 28 | 0.2 | 4 | 0.0 | 156 | 1.2 | 12 | 0.1 | 1 | 0.0 | 0 | 0.0 | 0 | 0.0 | 2 | 0.0 | 0 | 0.0 | 0.2 |
| 25-May | 28 | 0.2 | 4 | 0.0 | 156 | 1.2 | 29 | 0.2 | 1 | 0.0 | 1 | 0.0 | 0 | 0.0 | 3 | 0.0 | 0 | 0.0 | 0.2 |
| 26-May | 42 | 0.2 | 37 | 0.4 | 156 | 1.2 | 36 | 0.3 | 11 | 0.1 | 1 | 0.0 | 0 | 0.0 | 4 | 0.0 | 0 | 0.0 | 0.3 |
| 27-May | 63 | 0.3 | 40 | 0.4 | 164 | 1.3 | 67 | 0.6 | 25 | 0.1 | 1 | 0.0 | 20 | 0.2 | 7 | 0.1 | 0 | 0.0 | 0.3 |
| 28-May | 103 | 0.6 | 40 | 0.4 | 166 | 1.3 | 90 | 0.7 | 65 | 0.4 | 16 | 0.2 | 35 | 0.4 | 7 | 0.1 | 0 | 0.0 | 0.4 |
| 29-May | 164 | 0.9 | 40 | 0.4 | 166 | 1.3 | 99 | 0.8 | 72 | 0.4 | 16 | 0.2 | 35 | 0.4 | 7 | 0.1 | 0 | 0.0 | 0.5 |
| 30-May | 196 | 1.1 | 65 | 0.7 | 180 | 1.4 | 100 | 0.8 | 106 | 0.6 | 16 | 0.2 | 154 | 1.6 | 7 | 0.1 | 69 | 0.7 | 0.8 |
| 31-May | 202 | 1.1 | 65 | 0.7 | 194 | 1.5 | 101 | 0.8 | 133 | 0.7 | 17 | 0.2 | 154 | 1.6 | 7 | 0.1 | 120 | 1.3 | 0.9 |
| 01-Jun | 218 | 1.2 | 65 | 0.7 | 195 | 1.5 | 101 | 0.8 | 147 | 0.8 | 17 | 0.2 | 165 | 1.7 | 11 | 0.1 | 138 | 1.4 | 0.9 |
| 02-Jun | 830 | 4.6 | 66 | 0.7 | 195 | 1.5 | 102 | 0.8 | 197 | 1.1 | 17 | 0.2 | 321 | 3.3 | 11 | 0.1 | 348 | 3.7 | 1.8 |
| 03-Jun | 1184 | 6.6 | 712 | 8.0 | 196 | 1.5 | 236 | 1.9 | 297 | 1.7 | 28 | 0.3 | 902 | 9.2 | 12 | 0.1 | 581 | 6.1 | 3.9 |
| 04-Jun | 1538 | 8.5 | 1035 | 11.6 | 196 | 1.5 | 301 | 2.5 | 447 | 2.5 | 735 | 7.0 | 912 | 9.3 | 12 | 0.1 | 973 | 10.2 | 5.9 |
| 05-Jun | 1892 | 10.5 | 1035 | 11.6 | 196 | 1.5 | 486 | 4.0 | 623 | 3.5 | 983 | 9.3 | 912 | 9.3 | 121 | 1.2 | 1421 | 14.9 | 7.3 |
| 06-Jun | 2246 | 12.5 | 1035 | 11.6 | 199 | 1.6 | 655 | 5.4 | 863 | 4.8 | 1918 | 18.2 | 1218 | 12.4 | 142 | 1.5 | 1565 | 16.4 | 9.4 |
| 07-Jun | 2600 | 14.4 | 1218 | 13.6 | 414 | 3.3 | 669 | 5.5 | 1258 | 7.0 | 2049 | 19.5 | 1265 | 12.9 | 601 | 6.1 | 1609 | 16.9 | 11.0 |
| 08-Jun | 2633 | 14.6 | 1311 | 14.7 | 655 | 5.2 | 819 | 6.7 | 2040 | 11.4 | 2492 | 23.7 | 1380 | 14.1 | 623 | 6.4 | 2211 | 23.2 | 13.3 |
| 09-Jun | 2827 | 15.7 | 1404 | 15.7 | 735 | 5.8 | 880 | 7.2 | 2655 | 14.9 | 2829 | 26.9 | 1478 | 15.1 | 760 | 7.8 | 2445 | 25.7 | 15.0 |
| 10-Jun | 3342 | 18.6 | 1424 | 15.9 | 1335 | 10.5 | 890 | 7.3 | 2861 | 16.0 | 2937 | 27.9 | 1844 | 18.8 | 1722 | 17.6 | 2628 | 27.6 | 17.8 |
| 11-Jun | 3646 | 20.2 | 1442 | 16.1 | 2935 | 23.1 | 909 | 7.5 | 3752 | 21.0 | 3178 | 30.2 | 2469 | 25.2 | 1758 | 18.0 | 2936 | 30.8 | 21.4 |
| 12-Jun | 3950 | 21.9 | 1559 | 17.4 | 4136 | 32.6 | 909 | 7.5 | 3937 | 22.1 | 3527 | 33.5 | 2710 | 27.7 | 2002 | 20.5 | 3428 | 36.0 | 24.4 |
| 13-Jun | 4254 | 23.6 | 1676 | 18.7 | 4936 | 38.9 | 931 | 7.7 | 4153 | 23.3 | 3999 | 38.0 | 3431 | 35.0 | 2515 | 25.7 | 3929 | 41.2 | 28.0 |
| 14-Jun | 4558 | 25.3 | 1793 | 20.1 | 5336 | 42.0 | 1019 | 8.4 | 4627 | 25.9 | 4335 | 41.2 | 4135 | 42.2 | 2531 | 25.9 | 3995 | 41.9 | 30.3 |
| 15-Jun | 4863 | 27.0 | 1910 | 21.4 | 5389 | 42.5 | 1037 | 8.5 | 4934 | 27.6 | 4631 | 44.0 | 4730 | 48.3 | 2876 | 29.4 | 4016 | 42.2 | 32.3 |
| 16-Jun | 4886 | 27.1 | 2027 | 22.7 | 5700 | 44.9 | 1540 | 12.7 | 5537 | 31.0 | 4860 | 46.2 | 4744 | 48.4 | 2963 | 30.3 | 4308 | 45.2 | 34.3 |
| 17-Jun | 4914 | 27.3 | 2144 | 24.0 | 6222 | 49.0 | 4033 | 33.2 | 6550 | 36.7 | 5140 | 48.8 | 4794 | 48.9 | 2988 | 30.6 | 4661 | 48.9 | 38.6 |
| 18-Jun | 4969 | 27.6 | 2261 | 25.3 | 6482 | 51.1 | 4171 | 34.3 | 6770 | 37.9 | 5252 | 49.9 | 5025 | 51.3 | 3251 | 33.3 | 4860 | 51.0 | 40.2 |

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Appendix G1. (Page 2 of 4).

| | 1985 | | 1986 | | 1987 | | 1988 | | 1989 | | 1990 [a] | | 1991 | | 1992 | | 1993 | | 1985-90 |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| Date | No. | % | No. | % | No. | % | No. | % | No. | % | No. | % | No. | % | No. | % | No. | % | Avg. % |
| 19-Jun | 5247 | 29.1 | 2378 | 26.6 | 6579 | 51.8 | 4260 | 35.1 | 6779 | 38.0 | 5504 | 52.3 | 5255 | 53.7 | 3599 | 36.8 | 5237 | 55.0 | 42.0 |
| 20-Jun | 5490 | 30.5 | 2495 | 27.9 | 6788 | 53.5 | 4344 | 35.8 | 7000 | 39.2 | 5648 | 53.6 | 5485 | 56.0 | 3891 | 39.8 | 5395 | 56.6 | 43.7 |
| 21-Jun | 5658 | 31.4 | 2612 | 29.2 | 7126 | 56.2 | 4708 | 38.8 | 7500 | 42.0 | 5907 | 56.1 | 5715 | 58.4 | 4042 | 41.4 | 5654 | 59.4 | 45.9 |
| 22-Jun | 6124 | 34.0 | 2729 | 30.5 | 7313 | 57.6 | 4924 | 40.5 | 7732 | 43.3 | 6056 | 57.5 | 5856 | 59.8 | 4380 | 44.8 | 5801 | 60.9 | 47.7 |
| 23-Jun | 6332 | 35.2 | 2731 | 30.6 | 7912 | 62.3 | 5104 | 42.0 | 7900 | 44.3 | 6292 | 59.8 | 5914 | 60.4 | 5230 | 53.5 | 5879 | 61.7 | 50.0 |
| 24-Jun | 7475 | 41.5 | 2733 | 30.6 | 8435 | 66.5 | 5181 | 42.7 | 8304 | 46.5 | 6444 | 61.2 | 6080 | 62.1 | 5264 | 53.9 | 6132 | 64.4 | 52.1 |
| 25-Jun | 7671 | 42.6 | 2835 | 31.7 | 8884 | 70.0 | 5250 | 43.2 | 8784 | 49.2 | 6852 | 65.1 | 6194 | 63.2 | 5466 | 55.9 | 6308 | 66.2 | 54.1 |
| 26-Jun | 7978 | 44.3 | 2937 | 32.9 | 9257 | 72.9 | 5564 | 45.8 | 9184 | 51.4 | 7010 | 66.6 | 6368 | 65.0 | 5595 | 57.2 | 6401 | 67.2 | 55.9 |
| 27-Jun | 8261 | 45.9 | 3019 | 33.8 | 9556 | 75.3 | 5750 | 47.3 | 9490 | 53.2 | 7050 | 67.0 | 6413 | 65.5 | 5927 | 60.6 | 6577 | 69.0 | 57.5 |
| 28-Jun | 9075 | 50.4 | 3101 | 34.7 | 9781 | 77.1 | 5758 | 47.4 | 9830 | 55.1 | 7122 | 67.6 | 6473 | 66.1 | 6750 | 69.1 | 6666 | 70.0 | 59.7 |
| 29-Jun | 9121 | 50.6 | 3256 | 36.4 | 9930 | 78.3 | 5945 | 49.0 | 10173 | 57.0 | 7125 | 67.7 | 6510 | 66.5 | 6841 | 70.0 | 6684 | 70.2 | 60.6 |
| 30-Jun | 9208 | 51.1 | 3411 | 38.2 | 10005 | 78.8 | 5946 | 49.0 | 10436 | 58.5 | 7559 | 71.8 | 6638 | 67.8 | 6887 | 70.5 | 6699 | 70.3 | 61.8 |
| 01-Jul | 10045 | 55.8 | 3411 | 38.2 | 10008 | 78.9 | 5956 | 49.0 | 10839 | 60.7 | 7621 | 72.4 | 6692 | 68.3 | 6897 | 70.6 | 6827 | 71.7 | 62.8 |
| 02-Jul | 10312 | 57.3 | 3411 | 38.2 | 10045 | 79.2 | 5960 | 49.1 | 11123 | 62.3 | 7783 | 73.9 | 7040 | 71.9 | 7014 | 71.8 | 6865 | 72.1 | 64.0 |
| 03-Jul | 10590 | 58.8 | 3554 | 39.8 | 10150 | 80.0 | 6000 | 49.4 | 11277 | 63.2 | 7893 | 75.0 | 7184 | 73.4 | 7042 | 72.0 | 6906 | 72.5 | 64.9 |
| 04-Jul | 10694 | 59.4 | 3573 | 40.0 | 10154 | 80.0 | 6010 | 49.5 | 11451 | 64.1 | 7909 | 75.1 | 7265 | 74.2 | 7126 | 72.9 | 6911 | 72.5 | 65.3 |
| 05-Jul | 11242 | 62.4 | 3985 | 44.6 | 10156 | 80.0 | 6014 | 49.5 | 11638 | 65.2 | 7909 | 75.1 | 7342 | 75.0 | 7168 | 73.3 | 7003 | 73.5 | 66.5 |
| 06-Jul | 11295 | 62.7 | 4444 | 49.7 | 10159 | 80.1 | 7269 | 59.9 | 11720 | 65.6 | 7913 | 75.2 | 7402 | 75.6 | 7205 | 73.7 | 7004 | 73.5 | 68.4 |
| 07-Jul | 12358 | 68.6 | 4599 | 51.4 | 10185 | 80.3 | 7346 | 60.5 | 11874 | 66.5 | 7933 | 75.4 | 7480 | 76.4 | 7236 | 74.0 | 7015 | 73.6 | 69.6 |
| 08-Jul | 12462 | 69.2 | 4605 | 51.5 | 10188 | 80.3 | 7353 | 60.5 | 12096 | 67.8 | 7963 | 75.6 | 7503 | 76.6 | 7248 | 74.2 | 7047 | 74.0 | 70.0 |
| 09-Jul | 12547 | 69.7 | 4619 | 51.7 | 10189 | 80.3 | 7378 | 60.8 | 12521 | 70.1 | 8201 | 77.9 | 7599 | 77.6 | 7319 | 74.9 | 7067 | 74.2 | 70.8 |
| 10-Jul | 12660 | 70.3 | 4640 | 51.9 | 10251 | 80.8 | 7422 | 61.1 | 12706 | 71.2 | 8205 | 77.9 | 7614 | 77.7 | 7345 | 75.1 | 7070 | 74.2 | 71.2 |
| 11-Jul | 13093 | 72.7 | 4661 | 52.1 | 10292 | 81.1 | 7521 | 61.9 | 12790 | 71.6 | 8205 | 77.9 | 7680 | 78.4 | 7374 | 75.4 | 7135 | 74.9 | 71.8 |
| 12-Jul | 13266 | 73.7 | 4674 | 52.3 | 10300 | 81.2 | 7617 | 62.7 | 12841 | 71.9 | 8205 | 77.9 | 7688 | 78.5 | 7414 | 75.9 | 7202 | 75.6 | 72.2 |
| 13-Jul | 13341 | 74.1 | 4704 | 52.6 | 10307 | 81.2 | 8948 | 73.7 | 13032 | 73.0 | 8206 | 77.9 | 7693 | 78.5 | 7466 | 76.4 | 7209 | 75.7 | 73.7 |
| 14-Jul | 13603 | 75.5 | 4803 | 53.7 | 10320 | 81.3 | 8952 | 73.7 | 13062 | 73.2 | 8341 | 79.2 | 7707 | 78.7 | 7527 | 77.0 | 7254 | 76.1 | 74.3 |
| 15-Jul | 14750 | 81.9 | 4943 | 55.3 | 10437 | 82.2 | 8976 | 73.9 | 13676 | 76.6 | 8381 | 79.6 | 7748 | 79.1 | 7585 | 77.6 | 7366 | 77.3 | 76.0 |
| 16-Jul | 15354 | 85.3 | 4951 | 55.4 | 10456 | 82.4 | 9007 | 74.2 | 13931 | 78.0 | 8413 | 79.9 | 7825 | 79.9 | 7597 | 77.7 | 7388 | 77.6 | 76.7 |
| 17-Jul | 15513 | 86.1 | 5144 | 57.5 | 10481 | 82.6 | 9038 | 74.4 | 14041 | 78.6 | 8653 | 82.2 | 7831 | 80.0 | 7598 | 77.7 | 7634 | 80.1 | 77.7 |
| 18-Jul | 15513 | 86.1 | 5233 | 58.5 | 10489 | 82.7 | 9048 | 74.5 | 14259 | 79.9 | 8653 | 82.2 | 7956 | 81.2 | 7684 | 78.6 | 7679 | 80.6 | 78.3 |

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Appendix G1. (Page 3 of 4).

| | 1985 | | 1986 | | 1987 | | 1988 | | 1989 | | 1990[a] | | 1991 | | 1992 | | 1993 | | 1985-93 |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| Date | No. | % | No. | % | No. | % | No. | % | No. | % | No. | % | No. | % | No. | % | No. | % | Avg. % |
| 19-Jul | 15513 | 86.1 | 5395 | 60.4 | 10500 | 82.7 | 10285 | 84.7 | 14423 | 80.8 | 8668 | 82.3 | 7961 | 81.3 | 7845 | 80.3 | 7681 | 80.6 | 79.9 |
| 20-Jul | 15513 | 86.1 | 5737 | 64.2 | 10514 | 82.9 | 10425 | 85.8 | 14499 | 81.2 | 8718 | 82.8 | 7977 | 81.4 | 7874 | 80.6 | 7681 | 80.6 | 80.7 |
| 21-Jul | 15513 | 86.1 | 5869 | 65.7 | 10526 | 82.9 | 10440 | 86.0 | 14797 | 82.9 | 8803 | 83.6 | 8004 | 81.7 | 7907 | 80.9 | 7681 | 80.6 | 81.2 |
| 22-Jul | 15513 | 86.1 | 5953 | 66.6 | 10575 | 83.3 | 10457 | 86.1 | 14898 | 83.4 | 8899 | 84.5 | 8033 | 82.0 | 7938 | 81.2 | 7693 | 80.8 | 81.7 |
| 23-Jul | 15558 | 86.4 | 6055 | 67.7 | 10588 | 83.4 | 10468 | 86.2 | 15168 | 85.0 | 8917 | 84.7 | 8164 | 83.4 | 8019 | 82.0 | 7704 | 80.9 | 82.3 |
| 24-Jul | 15614 | 86.7 | 6076 | 68.0 | 10604 | 83.6 | 10478 | 86.3 | 15420 | 86.4 | 8935 | 84.9 | 8227 | 84.0 | 8204 | 83.9 | 7707 | 80.9 | 82.8 |
| 25-Jul | 15643 | 86.9 | 6140 | 68.7 | 10653 | 83.9 | 10528 | 86.7 | 15531 | 87.0 | 8954 | 85.0 | 8254 | 84.3 | 8253 | 84.4 | 7759 | 81.5 | 83.2 |
| 26-Jul | 15732 | 87.4 | 6234 | 69.7 | 10850 | 85.5 | 10648 | 87.7 | 15650 | 87.7 | 8957 | 85.1 | 8307 | 84.8 | 8268 | 84.6 | 7771 | 81.6 | 83.7 |
| 27-Jul | 15863 | 88.1 | 6305 | 70.5 | 10887 | 85.8 | 10713 | 88.2 | 15692 | 87.9 | 9008 | 85.6 | 8360 | 85.4 | 9711 | 99.4 | 7772 | 81.6 | 85.7 |
| 28-Jul | 16019 | 88.9 | 6558 | 73.4 | 10937 | 86.2 | 10756 | 88.6 | 15789 | 88.4 | 9299 | 88.3 | 8413 | 85.9 | 9711 | 99.4 | 7792 | 81.8 | 86.6 |
| 29-Jul | 16196 | 89.9 | 6662 | 74.5 | 11115 | 87.6 | 11520 | 94.9 | 15911 | 89.1 | 9386 | 89.2 | 8466 | 86.4 | 9711 | 99.4 | 7858 | 82.5 | 87.9 |
| 30-Jul | 16403 | 91.1 | 6733 | 75.3 | 11157 | 87.9 | 11543 | 95.1 | 16211 | 90.8 | 9424 | 89.5 | 8519 | 87.0 | 9711 | 99.4 | 8287 | 87.0 | 88.9 |
| 31-Jul | 16641 | 92.4 | 6870 | 76.9 | 11197 | 88.2 | 11554 | 95.1 | 16326 | 91.4 | 9475 | 90.0 | 8572 | 87.5 | 9711 | 99.4 | 9526 | 100.0 | 90.9 |
| 01-Aug | 16796 | 93.3 | 7191 | 80.4 | 11267 | 88.8 | 11591 | 95.4 | 16472 | 92.3 | 9755 | 92.7 | 8625 | 88.1 | 9711 | 99.4 | 9526 | 100.0 | 91.8 |
| 02-Aug | 16858 | 93.6 | 7368 | 82.4 | 11300 | 89.0 | 11640 | 95.8 | 16521 | 92.5 | 9812 | 93.2 | 8678 | 88.6 | 9711 | 99.4 | 9526 | 100.0 | 92.3 |
| 03-Aug | 16947 | 94.1 | 8020 | 89.7 | 11339 | 89.4 | 11686 | 96.2 | 16743 | 93.8 | 9973 | 94.7 | 8731 | 89.1 | 9711 | 99.4 | 9526 | 100.0 | 93.5 |
| 04-Aug | 17027 | 94.5 | 8178 | 91.5 | 11393 | 89.8 | 11744 | 96.7 | 16766 | 93.9 | 10033 | 95.3 | 8784 | 89.7 | 9711 | 99.4 | 9526 | 100.0 | 93.9 |
| 05-Aug | 17113 | 95.0 | 8264 | 92.4 | 11412 | 89.9 | 11758 | 96.8 | 16868 | 94.5 | 10082 | 95.8 | 8837 | 90.2 | 9711 | 99.4 | 9526 | 100.0 | 94.2 |
| 06-Aug | 17231 | 95.7 | 8377 | 93.7 | 11428 | 90.1 | 11796 | 97.1 | 16940 | 94.9 | 10137 | 96.3 | 8890 | 90.8 | 9711 | 99.4 | 9526 | 100.0 | 94.6 |
| 07-Aug | 17235 | 95.7 | 8597 | 96.2 | 11443 | 90.2 | 11850 | 97.6 | 17029 | 95.4 | 10196 | 96.8 | 8942 | 91.3 | 9711 | 99.4 | 9526 | 100.0 | 95.1 |
| 08-Aug | 17282 | 96.0 | 8732 | 97.7 | 11458 | 90.3 | 11869 | 97.7 | 17154 | 96.1 | 10249 | 97.3 | 8994 | 91.8 | 9711 | 99.4 | 9526 | 100.0 | 95.4 |
| 09-Aug | 17361 | 96.4 | 8782 | 98.2 | 11514 | 90.7 | 11883 | 97.9 | 17219 | 96.4 | 10290 | 97.7 | 9046 | 92.4 | 9711 | 99.4 | 9526 | 100.0 | 95.7 |
| 10-Aug | 17443 | 96.9 | 8807 | 98.5 | 11578 | 91.2 | 11905 | 98.0 | 17262 | 96.7 | 10326 | 98.1 | 9098 | 92.9 | 9711 | 99.4 | 9526 | 100.0 | 95.9 |
| 11-Aug | 17502 | 97.2 | 8866 | 99.2 | 11759 | 92.7 | 11911 | 98.1 | 17317 | 97.0 | 10381 | 98.6 | 9150 | 93.4 | 9711 | 99.4 | 9526 | 100.0 | 96.3 |
| 12-Aug | 17564 | 97.5 | 8867 | 99.2 | 11819 | 93.1 | 11926 | 98.2 | 17389 | 97.4 | 10414 | 98.9 | 9202 | 94.0 | 9711 | 99.4 | 9526 | 100.0 | 96.4 |
| 13-Aug | 17614 | 97.8 | 8882 | 99.4 | 11837 | 93.3 | 11937 | 98.3 | 17421 | 97.6 | 10433 | 99.1 | 9254 | 94.5 | 9711 | 99.4 | 9526 | 100.0 | 96.6 |
| 14-Aug | 17680 | 98.2 | 8885 | 99.4 | 11847 | 93.4 | 11939 | 98.3 | 17470 | 97.9 | 10452 | 99.3 | 9306 | 95.0 | 9711 | 99.4 | 9526 | 100.0 | 96.7 |
| 15-Aug | 17715 | 98.4 | 8885 | 99.4 | 11858 | 93.4 | 11946 | 98.4 | 17519 | 98.1 | 10468 | 99.4 | 9358 | 95.5 | 9711 | 99.4 | 9526 | 100.0 | 96.8 |
| 16-Aug | 17739 | 98.5 | 8885 | 99.4 | 11865 | 93.5 | 11962 | 98.5 | 17663 | 98.9 | 10479 | 99.5 | 9410 | 96.1 | 9711 | 99.4 | 9526 | 100.0 | 96.9 |
| 17-Aug | 17783 | 98.7 | 8885 | 99.4 | 11871 | 93.5 | 12092 | 99.6 | 17676 | 99.0 | 10482 | 99.6 | 9462 | 96.6 | 9711 | 99.4 | 9526 | 100.0 | 97.1 |

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Appendix G1. (Page 4 of 4).

| | 1985 | | 1986 | | 1987 | | 1988 | | 1989 | | 1990 [a] | | 1991 | | 1992 | | 1993 | | 1985-93 |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| Date | No. | % | No. | % | No. | % | No. | % | No. | % | No. | % | No. | % | No. | % | No. | % | Avg. % |
| 18-Aug | 17801 | 98.8 | 8900 | 99.6 | 11899 | 93.8 | 12101 | 99.6 | 17704 | 99.2 | 10482 | 99.6 | 9514 | 97.1 | 9711 | 99.4 | 9526 | 100.0 | 97.1 |
| 19-Aug | 17832 | 99.0 | 8901 | 99.6 | 11925 | 94.0 | 12105 | 99.7 | 17726 | 99.3 | 10485 | 99.6 | 9566 | 97.7 | 9711 | 99.4 | 9526 | 100.0 | 97.2 |
| 20-Aug | 17845 | 99.1 | 8901 | 99.6 | 11950 | 94.2 | 12110 | 99.7 | 17733 | 99.3 | 10486 | 99.6 | 9618 | 98.2 | 9711 | 99.4 | 9526 | 100.0 | 97.2 |
| 21-Aug | 17863 | 99.2 | 8902 | 99.6 | 11968 | 94.3 | 12127 | 99.9 | 17741 | 99.4 | 10486 | 99.6 | 9670 | 98.7 | 9711 | 99.4 | 9526 | 100.0 | 97.3 |
| 22-Aug | 17890 | 99.3 | 8904 | 99.6 | 11984 | 94.4 | 12133 | 99.9 | 17747 | 99.4 | 10486 | 99.6 | 9722 | 99.3 | 9711 | 99.4 | 9526 | 100.0 | 97.3 |
| 23-Aug | 17905 | 99.4 | 8911 | 99.7 | 12024 | 94.8 | 12133 | 99.9 | 17749 | 99.4 | 10487 | 99.6 | 9730 | 99.3 | 9711 | 99.4 | 9526 | 100.0 | 99.1 |
| 24-Aug | 17909 | 99.4 | 8917 | 99.8 | 12084 | 95.2 | 12135 | 99.9 | 17749 | 99.4 | 10487 | 99.6 | 9732 | 99.4 | 9711 | 99.4 | 9526 | 100.0 | 99.1 |
| Season Total | 18010 | | 8939 | | 12690 | | 12144 | | 17853 | | 10528 | | 9794 | | 9782 | | 9526 | | 12141 |
| Ending Date | 19-Sept | | 01-Oct | | 30-Sept | | 30-Sept | | 02-Oct | | 30-Sept | | 30-Sept | | 07-Oct | | 30-Sept | | |

[a] Beginning in 1990 the weir was moved to the outlet at Buskin Lake for June and July.

Appendix G2. Immigration of pink salmon through the Buskin River weir, 1985-1990[a].

| Date | 1985 | | 1986 | | 1987 | | 1988 | | 1989 | | 1990 | | 1985-90 |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| | No. | % | No. | % | No. | % | No. | % | No. | % | No. | % | Avg. % |
| 20-Jul | 1885 | 1.2 | 742 | 0.7 | 108 | 0.4 | 215 | 0.1 | 600 | 0.4 | 44 | 0.1 | 0.5 |
| 21-Jul | 2696 | 1.8 | 946 | 1.0 | 143 | 0.5 | 315 | 0.2 | 884 | 0.6 | 536 | 1.2 | 0.9 |
| 22-Jul | 3507 | 2.3 | 1174 | 1.2 | 247 | 0.9 | 562 | 0.3 | 1041 | 0.7 | 605 | 1.4 | 1.1 |
| 23-Jul | 4341 | 2.8 | 1505 | 1.5 | 277 | 1.0 | 795 | 0.4 | 1383 | 0.9 | 626 | 1.5 | 1.3 |
| 24-Jul | 6259 | 4.1 | 1612 | 1.6 | 323 | 1.2 | 1110 | 0.5 | 2033 | 1.3 | 678 | 1.6 | 1.7 |
| 25-Jul | 7084 | 4.6 | 1971 | 2.0 | 477 | 1.7 | 1754 | 0.9 | 2648 | 1.7 | 743 | 1.7 | 2.1 |
| 26-Jul | 8591 | 5.6 | 2302 | 2.3 | 604 | 2.2 | 2539 | 1.2 | 4615 | 2.9 | 751 | 1.8 | 2.7 |
| 27-Jul | 11394 | 7.4 | 2588 | 2.6 | 763 | 2.7 | 3494 | 1.7 | 6254 | 3.9 | 896 | 2.1 | 3.4 |
| 28-Jul | 13787 | 9.0 | 3530 | 3.6 | 941 | 3.4 | 4683 | 2.3 | 9150 | 5.8 | 1833 | 4.3 | 4.7 |
| 29-Jul | 17650 | 11.5 | 4159 | 4.2 | 1287 | 4.6 | 8142 | 4.0 | 13169 | 8.3 | 2591 | 6.0 | 6.4 |
| 30-Jul | 22116 | 14.5 | 5222 | 5.3 | 2014 | 7.2 | 11486 | 5.6 | 16556 | 10.4 | 3320 | 7.7 | 8.5 |
| 31-Jul | 24363 | 15.9 | 6679 | 6.7 | 3258 | 11.7 | 17442 | 8.6 | 19346 | 12.2 | 3617 | 8.4 | 10.6 |
| 01-Aug | 25217 | 16.5 | 7576 | 7.7 | 4752 | 17.0 | 23632 | 11.6 | 24346 | 15.3 | 4348 | 10.1 | 13.0 |
| 02-Aug | 30196 | 19.7 | 9252 | 9.3 | 5616 | 20.1 | 34693 | 17.0 | 27776 | 17.5 | 5770 | 13.5 | 16.2 |
| 03-Aug | 42604 | 27.8 | 14658 | 14.8 | 6994 | 25.1 | 46631 | 22.9 | 34573 | 21.7 | 7192 | 16.8 | 21.5 |
| 04-Aug | 54018 | 35.3 | 17970 | 18.2 | 8111 | 29.1 | 62144 | 30.5 | 39103 | 24.6 | 8614 | 20.1 | 26.3 |
| 05-Aug | 64523 | 42.2 | 22236 | 22.5 | 9037 | 32.4 | 72327 | 35.5 | 46383 | 29.1 | 10036 | 23.4 | 30.9 |
| 06-Aug | 75544 | 49.4 | 25812 | 26.1 | 9818 | 35.2 | 83068 | 40.8 | 55848 | 35.1 | 11458 | 26.7 | 35.5 |
| 07-Aug | 83174 | 54.4 | 29557 | 29.9 | 10746 | 38.5 | 104004 | 51.1 | 65128 | 40.9 | 12880 | 30.0 | 40.8 |
| 08-Aug | 88566 | 57.9 | 33503 | 33.9 | 11439 | 41.0 | 113334 | 55.7 | 73423 | 46.1 | 14302 | 33.3 | 44.7 |
| 09-Aug | 97014 | 63.4 | 37651 | 38.0 | 12210 | 43.8 | 129929 | 63.8 | 82283 | 51.7 | 15724 | 36.7 | 49.6 |
| 10-Aug | 106269 | 69.4 | 40484 | 40.9 | 12871 | 46.1 | 143643 | 70.6 | 89529 | 56.3 | 17146 | 40.0 | 53.9 |
| 11-Aug | 110618 | 72.3 | 48508 | 49.0 | 15006 | 53.8 | 151624 | 74.5 | 91733 | 57.6 | 18568 | 43.3 | 58.4 |
| 12-Aug | 116456 | 76.1 | 53571 | 54.1 | 16214 | 58.1 | 157449 | 77.3 | 95984 | 60.3 | 19990 | 46.6 | 62.1 |
| 13-Aug | 120075 | 78.5 | 56314 | 56.9 | 16945 | 60.8 | 162002 | 79.6 | 98984 | 62.2 | 21412 | 49.9 | 64.6 |
| 14-Aug | 122958 | 80.4 | 57889 | 58.5 | 17339 | 62.2 | 165859 | 81.5 | 102280 | 64.3 | 22834 | 53.2 | 66.7 |
| 15-Aug | 125903 | 82.3 | 60897 | 61.5 | 17553 | 62.9 | 168933 | 83.0 | 105612 | 66.4 | 24256 | 56.6 | 68.8 |
| 16-Aug | 127214 | 83.1 | 61924 | 62.6 | 17804 | 63.8 | 173405 | 85.2 | 111225 | 69.9 | 25908 | 60.4 | 70.8 |
| 17-Aug | 128122 | 83.7 | 62705 | 63.4 | 18065 | 64.8 | 182537 | 89.7 | 114120 | 71.7 | 26459 | 61.7 | 72.5 |
| 18-Aug | 128932 | 84.3 | 65193 | 65.9 | 18294 | 65.6 | 184808 | 90.8 | 126176 | 79.3 | 27610 | 64.4 | 75.0 |
| 19-Aug | 129751 | 84.8 | 65730 | 66.4 | 18640 | 66.8 | 185785 | 91.3 | 132550 | 83.3 | 28712 | 66.9 | 76.6 |

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Appendix G2. (Page 2 of 2).

| Date | 1985 No. | 1985 % | 1986 No. | 1986 % | 1987 No. | 1987 % | 1988 No. | 1988 % | 1989 No. | 1989 % | 1990 No. | 1990 % | 1985-90 Avg. % |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| 20-Aug | 129990 | 84.9 | 65910 | 66.6 | 19121 | 68.6 | 188096 | 92.4 | 134700 | 84.7 | 29194 | 68.1 | 77.5 |
| 21-Aug | 130524 | 85.3 | 66135 | 66.8 | 19530 | 70.0 | 190966 | 93.8 | 136100 | 85.5 | 29388 | 68.5 | 78.3 |
| 22-Aug | 132593 | 86.6 | 66712 | 67.4 | 19935 | 71.5 | 191457 | 94.0 | 137235 | 86.2 | 29906 | 69.7 | 79.3 |
| 23-Aug | 133019 | 86.9 | 67777 | 68.5 | 20295 | 72.8 | 192233 | 94.4 | 138139 | 86.8 | 30096 | 70.2 | 79.9 |
| 24-Aug | 133285 | 87.1 | 68342 | 69.1 | 21151 | 75.8 | 192946 | 94.8 | 139593 | 87.7 | 30422 | 70.9 | 80.9 |
| 25-Aug | 133670 | 87.4 | 70415 | 71.2 | 21648 | 77.6 | 194118 | 95.4 | 143958 | 90.5 | 31423 | 73.3 | 82.5 |
| 26-Aug | 134216 | 87.7 | 76519 | 77.3 | 22250 | 79.8 | 199510 | 98.0 | 147047 | 92.4 | 31961 | 74.5 | 84.9 |
| 27-Aug | 134874 | 88.1 | 80710 | 81.6 | 22449 | 80.5 | 200099 | 98.3 | 147872 | 92.9 | 33059 | 77.1 | 86.4 |
| 28-Aug | 135652 | 88.6 | 81768 | 82.6 | 22663 | 81.3 | 200599 | 98.5 | 148434 | 93.3 | 33901 | 79.0 | 87.2 |
| 29-Aug | 136776 | 89.4 | 82298 | 83.2 | 23096 | 82.8 | 201299 | 98.9 | 148999 | 93.6 | 34692 | 80.9 | 88.1 |
| 30-Aug | 139361 | 91.1 | 83655 | 84.5 | 23498 | 84.2 | 201899 | 99.2 | 149968 | 94.2 | 34833 | 81.2 | 89.1 |
| 31-Aug | 140876 | 92.1 | 85220 | 86.1 | 23728 | 85.1 | 202466 | 99.5 | 151271 | 95.1 | 35209 | 82.1 | 90.9 |
| 01-Sep | 141821 | 92.7 | 86094 | 87.0 | 24167 | 86.6 | 202930 | 99.7 | 153395 | 96.4 | 35576 | 82.9 | 91.9 |
| 02-Sep | 142709 | 93.3 | 87062 | 88.0 | 24721 | 88.6 | 202930 | 99.7 | 155278 | 97.6 | 36097 | 84.2 | 93.5 |
| 03-Sep | 144729 | 94.6 | 87832 | 88.8 | 25052 | 89.8 | 202930 | 99.7 | 155573 | 97.8 | 38750 | 90.3 | 94.1 |
| 04-Sep | 145825 | 95.3 | 88259 | 89.2 | 25385 | 91.0 | 202930 | 99.7 | 155673 | 97.8 | 39388 | 91.8 | 94.8 |
| 05-Sep | 146706 | 95.9 | 89557 | 90.5 | 25658 | 92.0 | 202930 | 99.7 | 155963 | 98.0 | 39765 | 92.7 | 95.9 |
| 06-Sep | 147406 | 96.3 | 91417 | 92.4 | 26591 | 95.3 | 203009 | 99.7 | 156315 | 98.2 | 39991 | 93.2 | 97.2 |
| 07-Sep | 148436 | 97.0 | 94880 | 95.9 | 27283 | 97.8 | 203578 | 100.0 | 157015 | 98.7 | 40138 | 93.6 | 97.7 |
| 08-Sep | 149411 | 97.6 | 95101 | 96.1 | 27313 | 97.9 | 203578 | 100.0 | 157413 | 98.9 | 40970 | 95.5 | 98.2 |
| 09-Sep | 149753 | 97.9 | 95251 | 96.3 | 27619 | 99.0 | 203578 | 100.0 | 158220 | 99.4 | 41411 | 96.6 | 98.4 |
| 10-Sep | 150300 | 98.2 | 95460 | 96.5 | 27729 | 99.4 | 203578 | 100.0 | 158335 | 99.5 | 41446 | 96.6 | 98.8 |
| Season Total | 15,3026 | | 98,958 | | 27,892 | | 20,3578 | | 159,123 | | 42,889 | | 114,244 |
| Ending Date | 21-Sept | | 01-Oct | | 19-Sept | | 06-Sept | | 28-Sept | | 25-Sept | | |

[a] The Buskin River weir was not operated during the peak pink salmon immigration after 1990.

Appendix G3. Immigration of coho salmon through the Buskin River weir, 1985-1993.

| Date | 1985 | | 1986 | | 1987 | | 1988 | | 1989 | | 1990 | | 1991 | | 1992 | | 1993 | | 1986-93[a] |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| | No. | % | No. | % | No. | % | No. | % | No. | % | No. | % | No. | % | No. | % | No. | % | Avg. % |
| 01-Aug | 4 | 0.0 | 6 | 0.1 | 0 | 0.0 | 0 | 0.0 | 0 | 0.0 | 1 | 0.0 | 0 | 0.0 | 0 | 0.0 | 0 | 0.0 | 0.0 |
| 02-Aug | 8 | 0.1 | 8 | 0.1 | 0 | 0.0 | 0 | 0.0 | 1 | 0.0 | 1 | 0.0 | 0 | 0.0 | 0 | 0.0 | 0 | 0.0 | 0.0 |
| 03-Aug | 14 | 0.1 | 21 | 0.2 | 1 | 0.0 | 2 | 0.0 | 1 | 0.0 | 1 | 0.0 | 0 | 0.0 | 0 | 0.0 | 0 | 0.0 | 0.0 |
| 04-Aug | 14 | 0.1 | 23 | 0.2 | 1 | 0.0 | 2 | 0.0 | 1 | 0.0 | 1 | 0.0 | 0 | 0.0 | 0 | 0.0 | 0 | 0.0 | 0.0 |
| 05-Aug | 17 | 0.2 | 29 | 0.3 | 2 | 0.0 | 3 | 0.0 | 1 | 0.0 | 1 | 0.0 | 0 | 0.0 | 0 | 0.0 | 0 | 0.0 | 0.0 |
| 06-Aug | 23 | 0.2 | 31 | 0.3 | 2 | 0.0 | 3 | 0.0 | 1 | 0.0 | 1 | 0.0 | 0 | 0.0 | 0 | 0.0 | 0 | 0.0 | 0.0 |
| 07-Aug | 32 | 0.3 | 33 | 0.3 | 5 | 0.0 | 4 | 0.1 | 2 | 0.0 | 1 | 0.0 | 0 | 0.0 | 0 | 0.0 | 0 | 0.0 | 0.0 |
| 08-Aug | 38 | 0.4 | 53 | 0.5 | 5 | 0.0 | 6 | 0.1 | 6 | 0.1 | 1 | 0.0 | 0 | 0.0 | 0 | 0.0 | 0 | 0.0 | 0.1 |
| 09-Aug | 44 | 0.5 | 91 | 0.9 | 5 | 0.0 | 7 | 0.1 | 7 | 0.1 | 1 | 0.0 | 0 | 0.0 | 0 | 0.0 | 0 | 0.0 | 0.2 |
| 10-Aug | 45 | 0.5 | 219 | 2.2 | 10 | 0.1 | 8 | 0.1 | 10 | 0.1 | 1 | 0.0 | 0 | 0.0 | 0 | 0.0 | 0 | 0.0 | 0.3 |
| 11-Aug | 50 | 0.5 | 239 | 2.4 | 14 | 0.1 | 9 | 0.1 | 10 | 0.1 | 1 | 0.0 | 0 | 0.0 | 0 | 0.0 | 0 | 0.0 | 0.4 |
| 12-Aug | 54 | 0.6 | 288 | 2.9 | 24 | 0.2 | 11 | 0.2 | 14 | 0.1 | 1 | 0.0 | 0 | 0.0 | 0 | 0.0 | 0 | 0.0 | 0.4 |
| 13-Aug | 63 | 0.7 | 313 | 3.1 | 33 | 0.3 | 17 | 0.3 | 16 | 0.2 | 1 | 0.0 | 0 | 0.0 | 0 | 0.0 | 0 | 0.0 | 0.5 |
| 14-Aug | 70 | 0.7 | 333 | 3.4 | 36 | 0.3 | 20 | 0.3 | 20 | 0.2 | 1 | 0.0 | 0 | 0.0 | 0 | 0.0 | 0 | 0.0 | 0.5 |
| 15-Aug | 77 | 0.8 | 392 | 3.9 | 42 | 0.4 | 20 | 0.3 | 25 | 0.3 | 1 | 0.0 | 0 | 0.0 | 0 | 0.0 | 0 | 0.0 | 0.6 |
| 16-Aug | 88 | 0.9 | 449 | 4.5 | 50 | 0.5 | 26 | 0.4 | 35 | 0.4 | 2 | 0.0 | 0 | 0.0 | 0 | 0.0 | 0 | 0.0 | 0.7 |
| 17-Aug | 100 | 1.1 | 507 | 5.1 | 51 | 0.5 | 60 | 1.0 | 44 | 0.4 | 18 | 0.3 | 0 | 0.0 | 0 | 0.0 | 0 | 0.0 | 0.9 |
| 18-Aug | 127 | 1.3 | 571 | 5.7 | 66 | 0.6 | 72 | 1.2 | 71 | 0.7 | 42 | 0.7 | 0 | 0.0 | 0 | 0.0 | 0 | 0.0 | 1.1 |
| 19-Aug | 136 | 1.4 | 613 | 6.2 | 68 | 0.6 | 92 | 1.5 | 105 | 1.1 | 56 | 0.9 | 0 | 0.0 | 0 | 0.0 | 1 | 0.1 | 1.3 |
| 20-Aug | 160 | 1.7 | 650 | 6.5 | 81 | 0.7 | 112 | 1.8 | 133 | 1.3 | 101 | 1.6 | 0 | 0.0 | 0 | 0.0 | 134 | 2.0 | 1.8 |
| 21-Aug | 192 | 2.0 | 751 | 7.6 | 104 | 0.9 | 197 | 3.2 | 148 | 1.5 | 161 | 2.6 | 0 | 0.0 | 0 | 0.0 | 138 | 2.0 | 2.2 |
| 22-Aug | 238 | 2.5 | 840 | 8.5 | 117 | 1.1 | 222 | 3.6 | 159 | 1.6 | 195 | 3.1 | 0 | 0.0 | 0 | 0.0 | 224 | 3.3 | 2.6 |
| 23-Aug | 264 | 2.8 | 918 | 9.2 | 139 | 1.3 | 232 | 3.8 | 171 | 1.7 | 231 | 3.7 | 155 | 1.7 | 0 | 0.0 | 302 | 4.4 | 3.2 |
| 24-Aug | 278 | 2.9 | 962 | 9.7 | 195 | 1.8 | 245 | 4.0 | 185 | 1.9 | 259 | 4.2 | 173 | 1.9 | 0 | 0.0 | 333 | 4.9 | 3.5 |
| 25-Aug | 299 | 3.2 | 986 | 9.9 | 276 | 2.5 | 298 | 4.8 | 310 | 3.1 | 280 | 4.5 | 198 | 2.2 | 25 | 0.4 | 400 | 5.9 | 4.2 |
| 26-Aug | 311 | 3.3 | 1184 | 11.9 | 315 | 2.8 | 650 | 10.5 | 370 | 3.7 | 340 | 5.5 | 236 | 2.6 | 132 | 2.0 | 467 | 6.9 | 5.8 |
| 27-Aug | 318 | 3.4 | 1438 | 14.5 | 349 | 3.1 | 1110 | 18.0 | 381 | 3.8 | 356 | 5.7 | 261 | 2.9 | 219 | 3.4 | 534 | 7.8 | 7.4 |
| 28-Aug | 333 | 3.5 | 1651 | 16.6 | 367 | 3.3 | 1610 | 26.0 | 393 | 4.0 | 380 | 6.1 | 310 | 3.5 | 261 | 4.0 | 635 | 9.3 | 9.1 |
| 29-Aug | 344 | 3.6 | 1763 | 17.7 | 388 | 3.5 | 2260 | 36.6 | 429 | 4.3 | 402 | 6.5 | 373 | 4.2 | 299 | 4.6 | 736 | 10.8 | 11.0 |
| 30-Aug | 379 | 4.0 | 3496 | 35.2 | 407 | 3.7 | 3260 | 52.7 | 478 | 4.8 | 428 | 6.9 | 437 | 4.9 | 459 | 7.0 | 837 | 12.3 | 15.9 |
| 31-Aug | 413 | 4.4 | 3805 | 38.3 | 418 | 3.8 | 3651 | 59.1 | 519 | 5.2 | 436 | 7.0 | 475 | 5.3 | 618 | 9.5 | 938 | 13.8 | 17.7 |
| 01-Sep | 430 | 4.5 | 3924 | 39.5 | 430 | 3.9 | 3790 | 61.3 | 852 | 8.6 | 444 | 7.1 | 492 | 5.5 | 799 | 12.2 | 1030 | 15.1 | 19.2 |

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Appendix G3. (Page 2 of 3).

| | 1985 | | 1986 | | 1987 | | 1988 | | 1989 | | 1990 | | 1991 | | 1992 | | 1993 | | 1986-93[a] |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| Date | No. | % | No. | % | No. | % | No. | % | No. | % | No. | % | No. | % | No. | % | No. | % | Avg. % |
| 02-Sep | 452 | 4.8 | 4087 | 41.1 | 481 | 4.3 | 4116 | 66.6 | 991 | 10.0 | 456 | 7.3 | 652 | 7.3 | 870 | 13.3 | 1123 | 16.5 | 20.8 |
| 03-Sep | 458 | 4.8 | 4267 | 42.9 | 510 | 4.6 | 4231 | 68.4 | 1041 | 10.5 | 463 | 7.4 | 807 | 9.0 | 897 | 13.7 | 1242 | 18.2 | 21.9 |
| 04-Sep | 464 | 4.9 | 4358 | 43.8 | 523 | 4.7 | 4298 | 69.5 | 1062 | 10.7 | 556 | 8.9 | 1320 | 14.8 | 920 | 14.1 | 1357 | 19.9 | 23.3 |
| 05-Sep | 466 | 4.9 | 4475 | 45.0 | 539 | 4.9 | 4364 | 70.6 | 1167 | 11.8 | 853 | 13.7 | 1562 | 17.5 | 942 | 14.4 | 1472 | 21.6 | 24.9 |
| 06-Sep | 466 | 4.9 | 4540 | 45.7 | 987 | 8.9 | 4431 | 71.7 | 1231 | 12.4 | 943 | 15.2 | 1659 | 18.6 | 976 | 14.9 | 1587 | 23.3 | 26.3 |
| 07-Sep | 468 | 4.9 | 4984 | 50.1 | 1947 | 17.5 | 4553 | 73.6 | 1298 | 13.1 | 1000 | 16.1 | 1861 | 20.8 | 1041 | 15.9 | 1702 | 25.0 | 29.0 |
| 08-Sep | 468 | 4.9 | 5065 | 51.0 | 2561 | 23.1 | 4573 | 74.0 | 1365 | 13.7 | 1042 | 16.7 | 2461 | 27.6 | 1187 | 18.2 | 1822 | 26.7 | 31.4 |
| 09-Sep | 469 | 5.0 | 5130 | 51.6 | 4367 | 39.3 | 4624 | 74.8 | 2240 | 22.6 | 1138 | 18.3 | 2511 | 28.1 | 1377 | 21.1 | 1928 | 28.3 | 35.5 |
| 10-Sep | 469 | 5.0 | 5178 | 52.1 | 5071 | 45.7 | 4757 | 76.9 | 2295 | 23.1 | 1242 | 20.0 | 2820 | 31.6 | 1406 | 21.5 | 2065 | 30.3 | 37.7 |
| 11-Sep | 469 | 5.0 | 5200 | 52.3 | 5669 | 51.1 | 4986 | 80.7 | 2783 | 28.0 | 1249 | 20.1 | 3169 | 35.5 | 1442 | 22.1 | 2161 | 31.7 | 40.2 |
| 12-Sep | 469 | 5.0 | 5239 | 52.7 | 5789 | 52.1 | 5160 | 83.5 | 3133 | 31.6 | 1301 | 20.9 | 3776 | 42.3 | 1493 | 22.8 | 2459 | 36.1 | 42.8 |
| 13-Sep | 469 | 5.0 | 5265 | 53.0 | 6047 | 54.5 | 5305 | 85.8 | 3684 | 37.1 | 1743 | 28.0 | 4689 | 52.5 | 1532 | 23.4 | 2777 | 40.8 | 46.9 |
| 14-Sep | 469 | 5.0 | 5321 | 53.5 | 6231 | 56.1 | 5387 | 87.1 | 4034 | 40.6 | 1886 | 30.3 | 5147 | 57.6 | 1638 | 25.1 | 3062 | 44.9 | 49.4 |
| 15-Sep | 474 | 5.0 | 5408 | 54.4 | 6521 | 58.7 | 5427 | 87.8 | 4814 | 48.5 | 2222 | 35.7 | 5605 | 62.8 | 1713 | 26.2 | 3179 | 46.7 | 52.6 |
| 16-Sep | 479 | 5.1 | 5466 | 55.0 | 7558 | 68.1 | 5448 | 88.1 | 5144 | 51.8 | 2565 | 41.2 | 6063 | 67.9 | 1773 | 27.1 | 3952 | 58.0 | 57.2 |
| 17-Sep | 503 | 5.3 | 5537 | 55.7 | 8062 | 72.6 | 5476 | 88.6 | 5965 | 60.1 | 3565 | 57.3 | 6521 | 73.0 | 3085 | 47.2 | 4506 | 66.1 | 65.1 |
| 18-Sep | 723 | 7.6 | 5613 | 56.5 | 8398 | 75.6 | 5490 | 88.8 | 6645 | 66.9 | 4065 | 65.3 | 6847 | 76.7 | 3268 | 50.0 | 4555 | 66.9 | 68.3 |
| 19-Sep | 879 | 9.3 | 5711 | 57.5 | 8904 | 80.2 | 5645 | 91.3 | 7645 | 77.0 | 4565 | 73.4 | 7131 | 79.9 | 3314 | 50.7 | 4687 | 68.8 | 72.3 |
| 20-Sep | 969 | 10.2 | 5794 | 58.3 | 9297 | 83.7 | 5686 | 92.0 | 8177 | 82.3 | 4965 | 79.8 | 7399 | 82.9 | 3345 | 51.2 | 4942 | 72.5 | 75.3 |
| 21-Sep | 1009 | 10.7 | 5947 | 59.8 | 9416 | 84.8 | 5725 | 92.6 | 8617 | 86.8 | 5165 | 83.0 | 7867 | 88.1 | 3378 | 51.7 | 5157 | 75.7 | 77.8 |
| 22-Sep | 2563 | 27.1 | 5974 | 60.1 | 9616 | 86.6 | 5748 | 93.0 | 9074 | 91.4 | 5365 | 86.2 | 7934 | 88.9 | 3383 | 51.8 | 5241 | 76.9 | 79.4 |
| 23-Sep | 2881 | 30.4 | 6046 | 60.8 | 9866 | 88.9 | 5828 | 94.3 | 9153 | 92.2 | 5515 | 88.6 | 8154 | 91.3 | 3385 | 51.8 | 5291 | 77.7 | 80.7 |
| 24-Sep | 3258 | 34.4 | 6193 | 62.3 | 10341 | 93.1 | 6182 | 100.0 | 9359 | 94.2 | 5608 | 90.1 | 8374 | 93.8 | 3390 | 51.9 | 5413 | 79.5 | 83.1 |
| 25-Sep | 3877 | 40.9 | 6233 | 62.7 | 10498 | 94.6 | 6182 | 100.0 | 9516 | 95.8 | 5830 | 93.7 | 8541 | 95.7 | 3410 | 52.2 | 5696 | 83.6 | 84.8 |
| 26-Sep | 6486 | 68.5 | 6596 | 66.4 | 10777 | 97.1 | 6182 | 100.0 | 9601 | 96.7 | 5959 | 95.8 | 8722 | 97.7 | 3425 | 52.4 | 6022 | 88.4 | 86.8 |
| 27-Sep | 6596 | 69.6 | 7346 | 73.9 | 10848 | 97.7 | 6182 | 100.0 | 9651 | 97.2 | 5959 | 95.8 | 8868 | 99.3 | 5193 | 79.5 | 6297 | 92.4 | 92.0 |
| 28-Sep | 7345 | 77.5 | 7401 | 74.5 | 10914 | 98.3 | 6182 | 100.0 | 9701 | 97.7 | 6222 | 100.0 | 8929 | 100.0 | 5513 | 84.4 | 6469 | 95.0 | 93.7 |
| 29-Sep | 7810 | 82.4 | 7464 | 75.1 | 10993 | 99.0 | 6182 | 100.0 | 9752 | 98.2 | 6222 | 100.0 | 8929 | 100.0 | 5649 | 86.4 | 6641 | 97.5 | 94.5 |
| 30-Sep | 8275 | 87.3 | 7488 | 75.3 | 11078 | 99.8 | 6182 | 100.0 | 9805 | 98.7 | 6222 | 100.0 | 8929 | 100.0 | 5820 | 89.1 | 6813 | 100.0 | 95.4 |
| 01-Oct | 8740 | 92.3 | 9335 | 93.9 | 11103 | 100.0 | 6182 | 100.0 | 9836 | 99.1 | 6222 | 100.0 | 8929 | 100.0 | 5935 | 90.8 | 6813 | 100.0 | 98.0 |

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Appendix G3. (Page 3 of 3).

| Date | 1985 | 1986 | 1987 | 1988 | 1989 | 1990 | 1991 | 1992 | 1993 | 1985-93[a] Avg. |
|---|---|---|---|---|---|---|---|---|---|---|
| Season Total | 9,474 | 9,939 | 11,103 | 6,182 | 9,930 | 6,222 | 8,929 | 6,535 | 6,813 | 8,347 |
| Ending Date | 23-Oct | 03-Oct | 01-Oct | 23-Sept | 02-Oct | 28-Sept | 28-Sept | 07-Oct | 01-Oct | |

[a] The year 1985 was not used in calculating the average time of entry, due to the late return of coho salmon to the Buskin River.

Appendix G4. Immigration of chinook salmon through the Karluk River weir, 1984-1993.

| | 1984 | | 1985 | | 1986 | | 1987 | | 1988 | | 1989 | | 1990 | | 1991 | | 1992 | | 1993 | | 1984-93 |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| Date | No. | % | No. | % | No. | % | No. | % | No. | % | No. | % | No. | % | No. | % | No. | % | No. | % | Avg. % |
| 20-May | 0 | 0.0 | 0 | 0.0 | 0 | 0.0 | 3 | 0.1 | 0 | 0.0 | 0 | 0.0 | 0 | 0.0 | 0 | 0.0 | 0 | 0.0 | 0 | 0.0 | 0.0 |
| 21-May | 0 | 0.0 | 0 | 0.0 | 0 | 0.0 | 13 | 0.2 | 0 | 0.0 | 0 | 0.0 | 0 | 0.0 | 0 | 0.0 | 0 | 0.0 | 0 | 0.0 | 0.1 |
| 22-May | 0 | 0.0 | 0 | 0.0 | 0 | 0.0 | 21 | 0.3 | 0 | 0.0 | 0 | 0.0 | 0 | 0.0 | 0 | 0.0 | 0 | 0.0 | 0 | 0.0 | 0.1 |
| 23-May | 12 | 0.2 | 1 | 0.1 | 0 | 0.0 | 31 | 0.4 | 0 | 0.0 | 0 | 0.0 | 0 | 0.0 | 0 | 0.0 | 0 | 0.0 | 0 | 0.0 | 0.1 |
| 24-May | 83 | 1.1 | 3 | 0.1 | 3 | 0.1 | 74 | 0.9 | 0 | 0.0 | 4 | 0.1 | 0 | 0.0 | 0 | 0.0 | 0 | 0.0 | 0 | 0.0 | 0.2 |
| 25-May | 186 | 2.4 | 7 | 0.1 | 5 | 0.1 | 122 | 1.5 | 0 | 0.0 | 12 | 0.1 | 0 | 0.0 | 0 | 0.0 | 0 | 0.0 | 56 | 0.4 | 0.5 |
| 26-May | 205 | 2.7 | 17 | 0.3 | 8 | 0.2 | 145 | 1.8 | 5 | 0.1 | 30 | 0.3 | 0 | 0.0 | 5 | 0.1 | 0 | 0.0 | 96 | 0.7 | 0.6 |
| 27-May | 332 | 4.3 | 17 | 0.3 | 10 | 0.2 | 181 | 2.3 | 26 | 0.2 | 62 | 0.6 | 0 | 0.0 | 126 | 0.2 | 1 | 0.1 | 212 | 1.5 | 0.9 |
| 28-May | 551 | 7.1 | 65 | 1.2 | 13 | 0.3 | 258 | 3.3 | 27 | 0.2 | 87 | 0.8 | 0 | 0.0 | 202 | 0.9 | 28 | 0.3 | 320 | 2.3 | 1.6 |
| 29-May | 745 | 9.6 | 120 | 2.2 | 19 | 0.4 | 287 | 3.6 | 41 | 0.3 | 130 | 1.2 | 42 | 0.3 | 301 | 1.4 | 63 | 0.7 | 438 | 3.1 | 2.3 |
| 30-May | 907 | 11.7 | 156 | 2.9 | 38 | 0.9 | 347 | 4.4 | 89 | 0.7 | 165 | 1.6 | 278 | 1.9 | 386 | 2.2 | 89 | 0.9 | 714 | 5.1 | 3.2 |
| 31-May | 1123 | 14.5 | 173 | 3.2 | 53 | 1.2 | 394 | 4.9 | 105 | 0.8 | 210 | 2.0 | 537 | 3.7 | 478 | 2.8 | 183 | 1.9 | 971 | 6.9 | 4.2 |
| 01-Jun | 1345 | 17.4 | 216 | 4.0 | 99 | 2.2 | 419 | 5.3 | 157 | 1.2 | 305 | 2.9 | 646 | 4.5 | 570 | 3.4 | 270 | 2.8 | 1517 | 10.9 | 5.5 |
| 02-Jun | 1534 | 19.8 | 258 | 4.8 | 152 | 3.4 | 515 | 6.5 | 276 | 2.1 | 451 | 4.3 | 1090 | 7.6 | 700 | 4.1 | 405 | 4.2 | 1943 | 13.9 | 7.1 |
| 03-Jun | 1933 | 24.9 | 322 | 6.0 | 202 | 4.6 | 638 | 8.1 | 319 | 2.4 | 524 | 5.0 | 1311 | 9.1 | 1310 | 4.9 | 529 | 5.5 | 2233 | 16.0 | 8.7 |
| 04-Jun | 2126 | 27.4 | 362 | 6.8 | 319 | 7.2 | 730 | 9.2 | 409 | 3.1 | 580 | 5.5 | 1586 | 10.9 | 1545 | 9.3 | 601 | 6.3 | 2559 | 18.4 | 10.4 |
| 05-Jun | 2352 | 30.4 | 439 | 8.2 | 430 | 9.7 | 813 | 10.3 | 521 | 3.9 | 824 | 7.9 | 1943 | 13.5 | 1879 | 11.1 | 818 | 8.5 | 3206 | 22.9 | 12.6 |
| 06-Jun | 2628 | 33.9 | 515 | 9.6 | 479 | 10.8 | 1075 | 13.6 | 641 | 4.8 | 978 | 9.3 | 2429 | 16.8 | 2199 | 13.4 | 985 | 10.3 | 3405 | 24.4 | 14.7 |
| 07-Jun | 2875 | 37.1 | 605 | 11.3 | 606 | 13.7 | 1186 | 14.9 | 761 | 5.7 | 1241 | 11.8 | 2969 | 20.6 | 2675 | 15.7 | 1148 | 11.9 | 3852 | 27.6 | 17.0 |
| 08-Jun | 3073 | 39.7 | 648 | 12.1 | 659 | 14.9 | 1259 | 15.9 | 818 | 6.1 | 1419 | 13.5 | 3433 | 23.8 | 3119 | 19.1 | 1365 | 14.2 | 4453 | 31.9 | 19.1 |
| 09-Jun | 3606 | 46.6 | 864 | 16.1 | 724 | 16.4 | 1432 | 18.1 | 1107 | 8.3 | 1705 | 16.3 | 4456 | 30.9 | 3744 | 22.2 | 1699 | 17.7 | 4917 | 35.3 | 22.8 |
| 10-Jun | 4144 | 53.5 | 968 | 18.1 | 828 | 18.7 | 1476 | 18.6 | 1655 | 12.4 | 1976 | 18.9 | 5432 | 37.6 | 3967 | 26.7 | 1947 | 20.3 | 5399 | 38.7 | 26.3 |
| 11-Jun | 4386 | 56.6 | 1105 | 20.6 | 951 | 21.5 | 1660 | 20.9 | 2139 | 16.0 | 2299 | 21.9 | 5810 | 40.3 | 4318 | 28.3 | 2329 | 24.3 | 5833 | 41.8 | 29.2 |
| 12-Jun | 4592 | 59.3 | 1308 | 24.4 | 1209 | 27.3 | 1841 | 23.2 | 2369 | 17.8 | 2555 | 24.4 | 6631 | 43.8 | 5160 | 30.8 | 2857 | 29.8 | 6187 | 44.4 | 32.5 |
| 13-Jun | 4800 | 61.9 | 1452 | 27.1 | 1291 | 29.2 | 1963 | 24.8 | 3106 | 23.3 | 2954 | 28.2 | 6825 | 47.3 | 5627 | 36.8 | 3259 | 33.9 | 6705 | 48.1 | 36.1 |
| 14-Jun | 4913 | 63.4 | 1806 | 33.7 | 1347 | 30.4 | 2402 | 30.3 | 3608 | 27.1 | 3277 | 31.3 | 7321 | 50.7 | 5935 | 40.1 | 3705 | 38.6 | 7161 | 51.4 | 39.7 |
| 15-Jun | 5193 | 67.0 | 1989 | 37.1 | 1628 | 36.8 | 2581 | 32.6 | 4141 | 31.1 | 3591 | 34.3 | 7598 | 52.6 | 6350 | 42.3 | 4093 | 42.6 | 7411 | 53.2 | 42.9 |
| 16-Jun | 5410 | 69.8 | 2091 | 39.0 | 1869 | 42.2 | 2749 | 34.7 | 5158 | 38.7 | 4058 | 38.7 | 7919 | 54.8 | 6893 | 45.3 | 4527 | 47.2 | 7542 | 54.1 | 46.4 |
| 17-Jun | 5643 | 72.8 | 2336 | 43.6 | 2082 | 47.0 | 2832 | 35.7 | 5663 | 42.5 | 4471 | 42.7 | 8070 | 55.9 | 7187 | 49.2 | 4893 | 50.9 | 7995 | 57.3 | 49.8 |
| 18-Jun | 5938 | 76.7 | 2503 | 46.7 | 2255 | 50.9 | 3110 | 39.2 | 6277 | 47.1 | 5071 | 48.4 | 8361 | 57.9 | 7916 | 51.3 | 5233 | 54.5 | 8290 | 59.5 | 53.2 |

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Appendix G4. (Page 2 of 4).

| | 1984 | | 1985 | | 1986 | | 1987 | | 1988 | | 1989 | | 1990 | | 1991 | | 1992 | | 1993 | | 1984-93 |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| Date | No. | % | No. | % | No. | % | No. | % | No. | % | No. | % | No. | % | No. | % | No. | % | No. | % | Avg. % |
| 19-Jun | 6051 | 78.1 | 2618 | 48.8 | 2537 | 57.3 | 3674 | 46.3 | 6869 | 51.5 | 5477 | 52.2 | 8949 | 61.9 | 8449 | 56.5 | 5609 | 58.4 | 8935 | 64.1 | 57.5 |
| 20-Jun | 6125 | 79.1 | 2773 | 51.7 | 2764 | 62.4 | 3882 | 48.9 | 7434 | 55.7 | 5649 | 53.9 | 9576 | 66.3 | 8769 | 60.3 | 5988 | 62.4 | 9250 | 66.3 | 60.7 |
| 21-Jun | 6212 | 80.2 | 2911 | 54.3 | 2867 | 64.7 | 4285 | 54.0 | 7743 | 58.1 | 6145 | 58.6 | 10183 | 70.5 | 9313 | 62.5 | 5274 | 65.4 | 9568 | 68.6 | 63.7 |
| 22-Jun | 6366 | 82.2 | 3099 | 57.8 | 2993 | 67.6 | 4511 | 56.9 | 8210 | 61.6 | 6749 | 64.4 | 10820 | 74.9 | 9753 | 66.4 | 6542 | 68.1 | 9965 | 71.5 | 67.1 |
| 23-Jun | 6508 | 84.0 | 3284 | 61.3 | 3186 | 71.9 | 4724 | 59.6 | 8854 | 66.4 | 7022 | 66.9 | 11383 | 78.8 | 10145 | 69.6 | 6803 | 70.9 | 10526 | 75.5 | 70.5 |
| 24-Jun | 6655 | 85.9 | 3398 | 63.4 | 3444 | 77.8 | 4838 | 61.0 | 9317 | 69.9 | 7486 | 71.4 | 11845 | 82.0 | 10596 | 72.4 | 6991 | 72.8 | 10721 | 76.9 | 73.3 |
| 25-Jun | 6796 | 87.7 | 3501 | 65.3 | 3669 | 82.8 | 5155 | 65.0 | 10220 | 76.6 | 7799 | 74.4 | 12210 | 84.6 | 11001 | 75.6 | 7184 | 74.8 | 11008 | 78.9 | 76.6 |
| 26-Jun | 6905 | 89.1 | 3716 | 69.3 | 3898 | 88.0 | 5592 | 70.5 | 10593 | 79.4 | 8049 | 76.8 | 12570 | 87.0 | 11380 | 78.5 | 7487 | 77.9 | 11325 | 81.2 | 79.8 |
| 27-Jun | 6978 | 90.1 | 3902 | 72.8 | 3977 | 89.8 | 5950 | 75.0 | 11157 | 83.6 | 8303 | 79.2 | 12876 | 89.2 | 11638 | 81.2 | 7779 | 81.0 | 11505 | 82.5 | 82.4 |
| 28-Jun | 7078 | 91.4 | 4016 | 74.9 | 4036 | 91.1 | 6057 | 76.4 | 11511 | 86.3 | 8477 | 80.9 | 13075 | 90.5 | 11892 | 83.0 | 7968 | 82.9 | 11668 | 83.7 | 84.1 |
| 29 Jun | 7153 | 92.3 | 4137 | 77.2 | 4112 | 92.8 | 6200 | 78.2 | 11718 | 87.9 | 8708 | 83.1 | 13246 | 91.7 | 12139 | 84.8 | 8159 | 84.9 | 11793 | 84.6 | 85.8 |
| 30-Jun | 7220 | 93.2 | 4340 | 80.9 | 4183 | 94.5 | 6396 | 80.7 | 11908 | 89.3 | 9061 | 86.4 | 13399 | 92.8 | 12370 | 86.6 | 8332 | 86.8 | 11978 | 85.9 | 87.7 |
| 01-Jul | 7278 | 93.9 | 4448 | 82.9 | 4200 | 94.8 | 6549 | 82.6 | 12063 | 90.5 | 9260 | 88.3 | 13579 | 94.0 | 12560 | 88.2 | 8475 | 88.3 | 12184 | 87.4 | 89.1 |
| 02-Jul | 7322 | 94.5 | 4538 | 84.6 | 4222 | 95.3 | 6759 | 85.2 | 12219 | 91.6 | 9293 | 88.6 | 13651 | 94.5 | 12743 | 89.6 | 8583 | 89.4 | 12569 | 90.1 | 90.4 |
| 03-Jul | 7361 | 95.0 | 4598 | 85.8 | 4223 | 95.4 | 6876 | 86.7 | 12284 | 92.1 | 9420 | 89.9 | 13743 | 95.2 | 12860 | 90.9 | 8658 | 90.2 | 12708 | 91.1 | 91.2 |
| 04-Jul | 7393 | 95.4 | 4666 | 87.0 | 4224 | 95.4 | 7006 | 88.4 | 12321 | 92.4 | 9511 | 90.7 | 13808 | 95.6 | 12962 | 91.7 | 8744 | 91.1 | 12845 | 92.1 | 91.9 |
| 05-Jul | 7451 | 96.2 | 4705 | 87.8 | 4246 | 95.9 | 7088 | 89.4 | 12466 | 93.5 | 9616 | 91.7 | 13867 | 96.0 | 13127 | 92.4 | 8810 | 91.8 | 12925 | 92.7 | 92.7 |
| 06-Jul | 7473 | 96.5 | 4865 | 90.7 | 4285 | 96.8 | 7172 | 90.4 | 12590 | 94.4 | 9764 | 93.1 | 13934 | 96.5 | 13267 | 93.6 | 8853 | 92.2 | 13039 | 93.5 | 93.8 |
| 07-Jul | 7490 | 96.7 | 4938 | 92.1 | 4330 | 97.8 | 7258 | 91.5 | 12668 | 94.9 | 9818 | 93.7 | 13966 | 96.7 | 13323 | 94.6 | 8929 | 93.0 | 13146 | 94.3 | 94.5 |
| 08-Jul | 7513 | 96.9 | 4974 | 92.8 | 4336 | 97.9 | 7345 | 92.6 | 12686 | 95.1 | 9838 | 93.8 | 14025 | 97.1 | 13390 | 95.0 | 8977 | 93.5 | 13191 | 94.6 | 94.9 |
| 09-Jul | 7529 | 97.2 | 5021 | 93.6 | 4337 | 97.9 | 7434 | 93.8 | 12762 | 95.7 | 9872 | 94.2 | 14033 | 97.2 | 13434 | 95.5 | 8996 | 93.7 | 13248 | 95.0 | 95.4 |
| 10-Jul | 7541 | 97.3 | 5051 | 94.2 | 4342 | 97.9 | 7499 | 94.6 | 12841 | 96.3 | 9904 | 94.5 | 14044 | 97.2 | 13484 | 95.8 | 9023 | 93.9 | 13302 | 95.4 | 95.7 |
| 11-Jul | 7553 | 97.5 | 5099 | 95.1 | 4349 | 98.0 | 7547 | 95.2 | 12873 | 96.5 | 9955 | 94.9 | 14069 | 97.4 | 13546 | 96.2 | 9094 | 94.7 | 13359 | 95.8 | 96.2 |
| 12-Jul | 7574 | 97.8 | 5142 | 95.9 | 4368 | 98.2 | 7570 | 95.5 | 12875 | 97.5 | 10023 | 95.6 | 14074 | 97.5 | 13619 | 96.6 | 9129 | 95.1 | 13385 | 95.9 | 96.5 |
| 13-Jul | 7588 | 97.9 | 5157 | 96.2 | 4374 | 98.6 | 7609 | 95.9 | 12933 | 96.9 | 10045 | 95.8 | 14081 | 97.5 | 13646 | 97.1 | 9141 | 95.2 | 13408 | 96.2 | 96.8 |
| 14-Jul | 7594 | 98.0 | 5167 | 96.4 | 4374 | 98.8 | 7632 | 96.2 | 12969 | 97.2 | 10081 | 96.2 | 14107 | 97.7 | 13692 | 97.3 | 9181 | 95.6 | 13470 | 96.6 | 97.0 |
| 15-Jul | 7614 | 98.3 | 5190 | 96.8 | 4374 | 98.8 | 7650 | 96.5 | 13004 | 97.5 | 10113 | 96.5 | 14112 | 97.7 | 13714 | 97.7 | 9201 | 95.8 | 13495 | 96.8 | 97.2 |
| 16-Jul | 7626 | 98.4 | 5212 | 97.2 | 4374 | 98.8 | 7691 | 96.9 | 13040 | 97.8 | 10145 | 96.8 | 14130 | 97.8 | 13733 | 97.8 | 9215 | 95.9 | 13532 | 97.1 | 97.5 |
| 17-Jul | 7637 | 98.6 | 5221 | 97.4 | 4374 | 98.8 | 7706 | 97.2 | 13061 | 97.9 | 10168 | 96.9 | 14145 | 97.9 | 13746 | 97.9 | 9241 | 96.3 | 13547 | 97.2 | 97.6 |
| 18-Jul | 7656 | 98.8 | 5228 | 97.5 | 4374 | 98.8 | 7723 | 97.4 | 13078 | 98.1 | 10185 | 97.2 | 14158 | 98.0 | 13765 | 98.0 | 9275 | 96.6 | 13589 | 97.5 | 97.8 |

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Appendix G4. (Page 3 of 4).

| | 1984 | | 1985 | | 1986 | | 1987 | | 1988 | | 1989 | | 1990 | | 1991 | | 1992 | | 1993 | | 1984-93 |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| Date | No. | % | No. | % | No. | % | No. | % | No. | % | No. | % | No. | % | No. | % | No. | % | No. | % | Avg. % |
| 19-Jul | 7660 | 98.9 | 5234 | 97.6 | 4375 | 98.8 | 7739 | 97.6 | 13104 | 98.3 | 10207 | 97.4 | 14175 | 98.2 | 13775 | 98.1 | 9294 | 96.8 | 13607 | 97.6 | 97.9 |
| 20-Jul | 7670 | 99.0 | 5236 | 97.7 | 4375 | 98.8 | 7755 | 97.8 | 13123 | 98.4 | 10215 | 97.4 | 14203 | 98.4 | 13785 | 98.2 | 9309 | 96.9 | 13623 | 97.7 | 98.0 |
| 21-Jul | 7674 | 99.1 | 5240 | 97.7 | 4375 | 98.8 | 7773 | 98.0 | 13135 | 98.5 | 10236 | 97.6 | 14212 | 98.4 | 13800 | 98.3 | 9318 | 97.1 | 13648 | 97.9 | 98.1 |
| 22-Jul | 7676 | 99.1 | 5252 | 97.9 | 4375 | 98.8 | 7787 | 98.2 | 13154 | 98.6 | 10242 | 97.7 | 14222 | 98.5 | 13810 | 98.4 | 9335 | 97.2 | 13694 | 98.2 | 98.3 |
| 23-Jul | 7680 | 99.1 | 5261 | 98.1 | 4377 | 98.8 | 7799 | 98.4 | 13160 | 98.7 | 10261 | 97.9 | 14240 | 98.6 | 13820 | 98.4 | 9341 | 97.3 | 13728 | 98.5 | 98.4 |
| 24-Jul | 7684 | 99.2 | 5262 | 98.1 | 4377 | 98.8 | 7810 | 98.5 | 13167 | 98.7 | 10278 | 98.0 | 14253 | 98.7 | 13825 | 98.5 | 9350 | 97.4 | 13736 | 98.5 | 98.5 |
| 25-Jul | 7688 | 99.2 | 5268 | 98.3 | 4380 | 98.9 | 7819 | 98.6 | 13175 | 98.8 | 10280 | 98.1 | 14263 | 98.8 | 13837 | 98.6 | 9360 | 97.5 | 13759 | 98.7 | 98.5 |
| 26-Jul | 7694 | 99.3 | 5268 | 98.3 | 4383 | 98.9 | 7826 | 98.7 | 13185 | 98.9 | 10280 | 98.1 | 14281 | 98.9 | 13849 | 98.6 | 9371 | 97.6 | 13765 | 98.7 | 98.6 |
| 27-Jul | 7704 | 99.4 | 5269 | 98.3 | 4386 | 99.0 | 7837 | 98.8 | 13193 | 98.9 | 10288 | 98.1 | 14291 | 98.9 | 13870 | 98.7 | 9394 | 97.8 | 13768 | 98.7 | 98.7 |
| 28-Jul | 7719 | 99.7 | 5276 | 98.4 | 4387 | 99.1 | 7844 | 98.9 | 13197 | 98.9 | 10292 | 98.2 | 14297 | 99.0 | 13879 | 98.8 | 9404 | 97.9 | 13776 | 98.8 | 98.8 |
| 29-Jul | 7723 | 99.7 | 5284 | 98.6 | 4391 | 99.1 | 7848 | 98.9 | 13219 | 99.1 | 10298 | 98.2 | 14305 | 99.1 | 13889 | 98.9 | 9433 | 98.3 | 13788 | 98.9 | 98.9 |
| 30-Jul | 7729 | 99.8 | 5289 | 98.6 | 4393 | 99.2 | 7862 | 99.1 | 13223 | 99.2 | 10309 | 98.3 | 14309 | 99.1 | 13899 | 99.0 | 9450 | 98.4 | 13789 | 98.9 | 98.9 |
| 31-Jul | 7733 | 99.8 | 5290 | 98.7 | 4396 | 99.3 | 7865 | 99.2 | 13228 | 99.2 | 10315 | 98.4 | 14312 | 99.1 | 13919 | 99.1 | 9480 | 98.7 | 13803 | 98.9 | 99.0 |
| 01-Aug | 7736 | 99.9 | 5292 | 98.7 | 4397 | 99.3 | 7871 | 99.3 | 13241 | 99.3 | 10329 | 98.5 | 14316 | 99.1 | 13920 | 99.3 | 9499 | 98.9 | 13827 | 98.9 | 99.1 |
| 02-Aug | 7740 | 99.9 | 5294 | 98.7 | 4399 | 99.3 | 7873 | 99.3 | 13247 | 99.3 | 10336 | 98.6 | 14323 | 99.2 | 13935 | 99.3 | 9510 | 98.9 | 13830 | 99.2 | 99.2 |
| 03-Aug | 7742 | 99.9 | 5295 | 98.8 | 4405 | 99.5 | 7878 | 99.3 | 13266 | 99.5 | 10341 | 98.6 | 14330 | 99.2 | 13941 | 99.4 | 9524 | 99.1 | 13832 | 99.2 | 99.3 |
| 04-Aug | 7742 | 99.9 | 5296 | 98.8 | 4407 | 99.5 | 7884 | 99.4 | 13267 | 99.5 | 10351 | 98.7 | 14348 | 99.4 | 13947 | 99.4 | 9528 | 99.2 | 13838 | 99.2 | 99.3 |
| 05-Aug | 7742 | 99.9 | 5299 | 98.8 | 4409 | 99.6 | 7890 | 99.5 | 13272 | 99.5 | 10360 | 98.8 | 14352 | 99.4 | 13950 | 99.5 | 9535 | 99.3 | 13847 | 99.2 | 99.4 |
| 06-Aug | 7744 | 99.9 | 5314 | 99.1 | 4413 | 99.6 | 7894 | 99.6 | 13273 | 99.5 | 10372 | 98.9 | 14364 | 99.5 | 13957 | 99.5 | 9542 | 99.4 | 13860 | 99.3 | 99.4 |
| 07-Aug | 7744 | 99.9 | 5315 | 99.1 | 4413 | 99.6 | 7896 | 99.6 | 13274 | 99.5 | 10375 | 98.9 | 14366 | 99.5 | 13963 | 99.5 | 9545 | 99.4 | 13869 | 99.4 | 99.5 |
| 08-Aug | 7744 | 99.9 | 5319 | 99.2 | 4422 | 99.8 | 7900 | 99.6 | 13279 | 99.6 | 10378 | 98.9 | 14372 | 99.5 | 13969 | 99.6 | 9545 | 99.4 | 13871 | 99.5 | 99.5 |
| 09-Aug | 7745 | 99.9 | 5319 | 99.2 | 4423 | 99.9 | 7902 | 99.7 | 13287 | 99.6 | 10381 | 99.0 | 14379 | 99.6 | 13976 | 99.6 | 9547 | 99.4 | 13872 | 99.5 | 99.5 |
| 10-Aug | 7745 | 99.9 | 5319 | 99.2 | 4423 | 99.9 | 7908 | 99.7 | 13293 | 99.7 | 10393 | 99.1 | 14383 | 99.6 | 13983 | 99.7 | 9549 | 99.5 | 13878 | 99.5 | 99.6 |
| 11-Aug | 7745 | 99.9 | 5322 | 99.3 | 4423 | 99.9 | 7912 | 99.8 | 13299 | 99.7 | 10402 | 99.2 | 14389 | 99.6 | 13989 | 99.7 | 9552 | 99.5 | 13892 | 99.5 | 99.6 |
| 12-Aug | 7745 | 99.9 | 5335 | 99.5 | 4426 | 99.9 | 7915 | 99.8 | 13303 | 99.8 | 10403 | 99.2 | 14396 | 99.7 | 13991 | 99.8 | 9556 | 99.5 | 13896 | 99.6 | 99.7 |
| 13-Aug | 7745 | 99.9 | 5342 | 99.6 | 4426 | 99.9 | 7916 | 99.8 | 13304 | 99.8 | 10404 | 99.2 | 14398 | 99.7 | 13992 | 99.8 | 9557 | 99.5 | 13898 | 99.7 | 99.7 |
| 14-Aug | 7745 | 99.9 | 5347 | 99.7 | 4426 | 99.9 | 7918 | 99.9 | 13308 | 99.8 | 10407 | 99.3 | 14398 | 99.7 | 13995 | 99.8 | 9559 | 99.6 | 13902 | 99.7 | 99.7 |
| 15-Aug | 7746 | 99.9 | 5348 | 99.7 | 4426 | 99.9 | 7920 | 99.9 | 13311 | 99.8 | 10411 | 99.3 | 14398 | 99.7 | 13999 | 99.8 | 9563 | 99.6 | 13903 | 99.7 | 99.7 |
| 16-Aug | 7746 | 99.9 | 5350 | 99.8 | 4426 | 99.9 | 7923 | 99.9 | 13312 | 99.8 | 10413 | 99.3 | 14399 | 99.7 | 14000 | 99.8 | 9575 | 99.7 | 13911 | 99.7 | 99.8 |
| 17-Aug | 7746 | 99.9 | 5351 | 99.8 | 4427 | 99.9 | 7924 | 99.9 | 13316 | 99.8 | 10418 | 99.4 | 14400 | 99.7 | 14001 | 99.8 | 9578 | 99.8 | 13913 | 99.8 | 99.8 |

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Appendix G4. (Page 4 of 4).

| | 1984 | | 1985 | | 1986 | | 1987 | | 1988 | | 1989 | | 1990 | | 1991 | | 1992 | | 1993 | | 1984-93 |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| Date | No. | % | No. | % | No. | % | No. | % | No. | % | No. | % | No. | % | No. | % | No. | % | No. | % | Avg. % |
| 18-Aug | 7746 | 99.9 | 5351 | 99.8 | 4427 | 99.9 | 7924 | 99.9 | 13317 | 99.9 | 10429 | 99.5 | 14400 | 99.7 | 14002 | 99.9 | 9578 | 99.8 | 13919 | 99.8 | 99.8 |
| 19-Aug | 7746 | 99.9 | 5351 | 99.8 | 4427 | 99.9 | 7925 | 99.9 | 13320 | 99.9 | 10432 | 99.5 | 14401 | 99.7 | 14006 | 99.9 | 9578 | 99.8 | 13923 | 99.8 | 99.8 |
| 20-Aug | 7746 | 99.9 | 5352 | 99.8 | 4427 | 99.2 | 7925 | 99.9 | 13324 | 99.9 | 10436 | 99.5 | 14403 | 99.7 | 14008 | 99.9 | 9580 | 99.8 | 13928 | 99.9 | 99.8 |
| 21-Aug | 7747 | 100.0 | 5353 | 99.8 | 4428 | 99.9 | 7927 | 99.9 | 13328 | 99.9 | 10438 | 99.6 | 14405 | 99.7 | 14008 | 99.9 | 9584 | 99.8 | 13932 | 99.9 | 99.9 |
| 22-Aug | 7747 | 100.0 | 5354 | 99.9 | 4428 | 99.9 | 7927 | 99.9 | 13329 | 99.9 | 10446 | 99.6 | 14409 | 99.7 | 14008 | 99.9 | 9585 | 99.8 | 13934 | 99.9 | 99.9 |
| 23-Aug | 7747 | 100.0 | 5354 | 99.9 | 4428 | 99.9 | 7928 | 99.9 | 13330 | 99.9 | 10454 | 99.7 | 14413 | 99.8 | 14009 | 99.9 | 9591 | 99.9 | 13936 | 99.9 | 99.9 |
| 24-Aug | 7747 | 100.0 | 5355 | 99.9 | 4428 | 99.9 | 7929 | 99.9 | 13331 | 99.9 | 10458 | 99.8 | 14415 | 99.8 | 14010 | 99.9 | 9594 | 99.9 | 13938 | 99.9 | 99.9 |
| 25-Aug | 7747 | 100.0 | 5357 | 99.9 | 4428 | 99.9 | 7929 | 99.9 | 13332 | 99.9 | 10463 | 99.8 | 14417 | 99.8 | 14011 | 99.9 | 9595 | 99.9 | 13940 | 99.9 | 99.9 |
| 26-Aug | 7747 | 100.0 | 5358 | 99.9 | 4429 | 100.0 | 7929 | 99.9 | 13332 | 99.9 | 10464 | 99.8 | 14422 | 99.9 | 14013 | 99.9 | 9596 | 99.9 | 13940 | 99.9 | 99.9 |
| 27-Aug | 7747 | 100.0 | 5360 | 99.9 | 4429 | 100.0 | 7930 | 100.0 | 13332 | 99.9 | 10465 | 99.8 | 14427 | 99.9 | 14014 | 99.9 | 9596 | 99.9 | 13942 | 99.9 | 99.9 |
| 28-Aug | 7747 | 100.0 | 5360 | 99.9 | 4429 | 100.0 | 7930 | 100.0 | 13332 | 99.9 | 10468 | 99.9 | 14428 | 99.9 | 14015 | 99.9 | 9596 | 99.9 | 13943 | 99.9 | 99.9 |
| 29-Aug | 7747 | 100.0 | 5362 | 100.0 | 4429 | 100.0 | 7930 | 100.0 | 13334 | 99.9 | 10472 | 99.9 | 14432 | 99.9 | 14016 | 99.9 | 9596 | 99.9 | 13943 | 99.9 | 99.9 |
| 30-Aug | 7747 | 100.0 | 5362 | 100.0 | 4429 | 100.0 | 7930 | 100.0 | 13336 | 99.9 | 10473 | 99.9 | 14432 | 99.9 | 14016 | 99.9 | 9596 | 99.9 | 13943 | 99.9 | 99.9 |
| 31-Aug | 7747 | 100.0 | 5362 | 100.0 | 4429 | 100.0 | 7930 | 100.0 | 13337 | 100.0 | 10473 | 99.9 | 14433 | 99.9 | 14016 | 99.9 | 9596 | 99.9 | 13943 | 99.9 | 99.9 |
| 01-Sept | 7747 | 100.0 | 5362 | 100.0 | 4429 | 100.0 | 7930 | 100.0 | 13337 | 100.0 | 10475 | 99.9 | 14436 | 99.9 | 14020 | 99.9 | 9596 | 99.9 | 13943 | 99.9 | 99.9 |
| 02-Sept | 7747 | 100.0 | 5362 | 100.0 | 4429 | 100.0 | 7930 | 100.0 | 13337 | 100.0 | 10476 | 99.9 | 14441 | 99.9 | 14020 | 99.9 | 9596 | 99.9 | 13944 | 99.9 | 99.9 |
| Season Total | 7,747 | | 5,362 | | 4,429 | | 7,930 | | 13,337 | | 10,484 | | 14,442 | | 14,022 | | 9,601 | | 13,944 | | |

Appendix G5. Immigration of chinook salmon through the Ayakulik River weir, 1984-1993.

| | 1984 | | 1985 | | 1986 | | 1987 | | 1988 | | 1989 | | 1990 | | 1991 | | 1992 | | 1993 | | 1984-93 |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| Date | No. | % | No. | % | No. | % | No. | % | No. | % | No. | % | No. | % | No. | % | No. | % | No. | % | Avg. % |
| 20-May | 0 | 0.0 | 0 | 0.0 | 77 | 1.2 | 0 | 0.0 | 0 | 0.0 | 0 | 0.0 | 0 | 0.0 | 0 | 0.0 | 0 | 0.0 | 0 | 0.0 | 0.1 |
| 21-May | 19 | 0.3 | 0 | 0.0 | 83 | 1.3 | 0 | 0.0 | 0 | 0.0 | 0 | 0.0 | 0 | 0.0 | 0 | 0.0 | 0 | 0.0 | 0 | 0.0 | 0.2 |
| 22-May | 62 | 0.9 | 0 | 0.0 | 90 | 1.4 | 0 | 0.0 | 0 | 0.0 | 0 | 0.0 | 0 | 0.0 | 0 | 0.0 | 205 | 2.2 | 0 | 0.0 | 0.5 |
| 23-May | 692 | 10.6 | 0 | 0.0 | 104 | 1.6 | 0 | 0.0 | 0 | 0.0 | 0 | 0.0 | 0 | 0.0 | 0 | 0.0 | 361 | 3.9 | 21 | 0.3 | 1.7 |
| 24-May | 806 | 12.4 | 0 | 0.0 | 117 | 1.8 | 30 | 0.2 | 0 | 0.0 | 0 | 0.0 | 0 | 0.0 | 0 | 0.0 | 800 | 8.8 | 28 | 0.4 | 2.4 |
| 25-May | 989 | 15.2 | 0 | 0.0 | 144 | 2.3 | 36 | 0.2 | 15 | 0.1 | 0 | 0.0 | 0 | 0.0 | 20 | 0.2 | 885 | 9.7 | 37 | 0.5 | 2.8 |
| 26-May | 1226 | 18.9 | 0 | 0.0 | 156 | 2.5 | 85 | 0.5 | 284 | 1.3 | 0 | 0.0 | 0 | 0.0 | 78 | 0.6 | 1042 | 11.4 | 44 | 0.6 | 3.6 |
| 27-May | 1556 | 23.9 | 0 | 0.0 | 309 | 4.9 | 167 | 1.1 | 401 | 1.9 | 0 | 0.0 | 800 | 7.1 | 113 | 0.9 | 1351 | 14.8 | 103 | 1.3 | 5.6 |
| 28-May | 1840 | 28.3 | 0 | 0.0 | 319 | 5.0 | 225 | 1.4 | 560 | 2.6 | 0 | 0.0 | 1318 | 11.7 | 380 | 2.9 | 1588 | 17.4 | 241 | 3.1 | 7.3 |
| 29-May | 1989 | 30.6 | 0 | 0.0 | 337 | 5.3 | 270 | 1.7 | 714 | 3.3 | 0 | 0.0 | 1709 | 15.2 | 566 | 4.4 | 1699 | 18.6 | 326 | 4.2 | 8.3 |
| 30-May | 2086 | 32.1 | 0 | 0.0 | 407 | 6.4 | 361 | 2.3 | 892 | 4.2 | 0 | 0.0 | 2137 | 18.9 | 603 | 4.6 | 1836 | 20.1 | 370 | 4.7 | 9.3 |
| 31-May | 2191 | 33.7 | 0 | 0.0 | 499 | 7.8 | 415 | 2.7 | 1021 | 4.8 | 7 | 0.1 | 2409 | 21.4 | 655 | 5.0 | 2012 | 22.0 | 821 | 10.5 | 10.8 |
| 01-Jun | 2229 | 34.3 | 0 | 0.0 | 647 | 10.2 | 491 | 3.1 | 1106 | 5.2 | 58 | 0.4 | 3100 | 27.6 | 671 | 5.2 | 2045 | 22.4 | 1927 | 24.7 | 13.3 |
| 02-Jun | 2329 | 35.8 | 0 | 0.0 | 726 | 11.4 | 526 | 3.4 | 1176 | 5.5 | 202 | 1.3 | 3797 | 33.8 | 697 | 5.4 | 2385 | 26.1 | 3118 | 39.9 | 16.3 |
| 03-Jun | 2416 | 37.2 | 328 | 4.0 | 763 | 11.9 | 538 | 3.4 | 1400 | 6.6 | 255 | 1.7 | 4144 | 36.8 | 711 | 5.5 | 2879 | 31.5 | 3225 | 41.3 | 17.9 |
| 04-Jun | 2584 | 39.7 | 445 | 5.5 | 864 | 13.6 | 913 | 5.8 | 1634 | 7.7 | 387 | 2.5 | 4393 | 39.1 | 772 | 5.9 | 2957 | 32.4 | 3352 | 42.9 | 19.5 |
| 05-Jun | 2644 | 40.7 | 612 | 7.5 | 892 | 14.0 | 1285 | 18.2 | 1872 | 8.8 | 494 | 3.2 | 4988 | 44.3 | 961 | 7.4 | 3030 | 33.2 | 3585 | 45.9 | 21.3 |
| 06-Jun | 2809 | 43.2 | 1109 | 13.6 | 936 | 14.6 | 2071 | 13.3 | 2086 | 9.8 | 804 | 5.2 | 5708 | 50.7 | 1544 | 11.9 | 3384 | 37.0 | 3623 | 46.3 | 24.6 |
| 07-Jun | 3089 | 47.5 | 1498 | 18.4 | 1023 | 16.1 | 2442 | 15.6 | 2278 | 10.7 | 1272 | 8.2 | 5787 | 51.4 | 3068 | 23.6 | 4073 | 44.6 | 3686 | 47.1 | 28.3 |
| 08-Jun | 3238 | 49.8 | 2614 | 32.1 | 1165 | 18.3 | 2611 | 16.7 | 2426 | 11.4 | 1408 | 9.1 | 6659 | 59.2 | 4164 | 32.1 | 4273 | 46.8 | 3708 | 47.4 | 32.3 |
| 09-Jun | 3480 | 53.5 | 3707 | 45.5 | 1483 | 23.3 | 2743 | 17.5 | 2590 | 12.1 | 1520 | 9.9 | 6893 | 61.3 | 5852 | 45.1 | 4414 | 48.3 | 3861 | 49.4 | 36.6 |
| 10-Jun | 3846 | 59.2 | 4518 | 55.4 | 1576 | 24.7 | 3157 | 20.2 | 2857 | 13.4 | 2134 | 13.8 | 7005 | 62.3 | 7116 | 54.8 | 4480 | 49.0 | 4154 | 53.1 | 40.6 |
| 11-Jun | 4006 | 61.6 | 4753 | 58.3 | 1686 | 26.5 | 3580 | 22.9 | 3975 | 18.6 | 2967 | 19.2 | 7157 | 63.6 | 7714 | 59.4 | 4624 | 50.6 | 4537 | 58.0 | 43.9 |
| 12-Jun | 4159 | 63.9 | 4909 | 60.2 | 1812 | 28.4 | 3671 | 23.5 | 5045 | 23.6 | 4073 | 26.4 | 7216 | 64.1 | 8268 | 63.7 | 4848 | 53.1 | 4807 | 61.5 | 46.9 |
| 13-Jun | 4225 | 64.9 | 5033 | 61.8 | 2037 | 31.9 | 3804 | 24.3 | 7117 | 33.3 | 4966 | 32.2 | 7427 | 66.0 | 8311 | 63.9 | 5115 | 55.9 | 5041 | 64.5 | 49.9 |
| 14-Jun | 4396 | 67.6 | 5087 | 62.4 | 2816 | 44.2 | 4044 | 25.9 | 7586 | 35.5 | 5580 | 36.2 | 7433 | 66.1 | 8728 | 67.2 | 5261 | 57.6 | 5160 | 65.9 | 52.9 |
| 15-Jun | 4498 | 69.2 | 5217 | 64.0 | 3194 | 50.1 | 4158 | 26.6 | 7897 | 36.9 | 6732 | 43.6 | 7448 | 66.2 | 8858 | 68.2 | 5435 | 59.5 | 5255 | 67.2 | 55.2 |
| 16-Jun | 4599 | 70.7 | 5340 | 65.5 | 3407 | 53.5 | 4432 | 28.3 | 8979 | 42.0 | 7357 | 47.7 | 7698 | 68.4 | 8884 | 68.4 | 5626 | 61.6 | 5437 | 69.5 | 57.6 |
| 17-Jun | 4655 | 71.6 | 5583 | 68.5 | 3718 | 58.4 | 5006 | 32.0 | 10020 | 46.9 | 8238 | 53.4 | 7948 | 70.6 | 9001 | 69.3 | 5807 | 63.6 | 5553 | 71.0 | 60.5 |
| 18-Jun | 4796 | 73.8 | 5750 | 70.5 | 3923 | 61.6 | 5411 | 34.6 | 10268 | 48.1 | 9192 | 59.6 | 8198 | 72.9 | 9168 | 70.6 | 5901 | 64.6 | 5664 | 72.4 | 62.9 |

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Appendix G5. (Page 2 of 4).

| | 1984 | | 1985 | | 1986 | | 1987 | | 1988 | | 1989 | | 1990 | | 1991 | | 1992 | | 1993 | | 1984-93 |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| Date | No. | % | No. | % | No. | % | No. | % | No. | % | No. | % | No. | % | No. | % | No. | % | No. | % | Avg. % |
| 19-Jun | 5068 | 77.9 | 5789 | 71.0 | 3988 | 62.6 | 5714 | 36.5 | 12263 | 57.4 | 9218 | 59.7 | 8448 | 75.1 | 9259 | 71.3 | 6085 | 66.6 | 5834 | 74.6 | 65.3 |
| 20-Jun | 5133 | 78.9 | 5963 | 73.2 | 4053 | 63.6 | 5971 | 38.2 | 12340 | 57.7 | 10032 | 65.0 | 8578 | 76.2 | 9295 | 71.6 | 6116 | 66.9 | 5917 | 75.7 | 66.7 |
| 21-Jun | 5183 | 79.7 | 6092 | 74.7 | 4124 | 64.7 | 7037 | 45.0 | 13453 | 62.9 | 10259 | 66.5 | 8983 | 79.8 | 9317 | 71.7 | 6520 | 71.4 | 5936 | 75.9 | 69.3 |
| 22-Jun | 5333 | 82.0 | 6173 | 75.7 | 4225 | 66.3 | 7689 | 49.2 | 14292 | 66.9 | 10440 | 67.7 | 9242 | 82.1 | 9482 | 73.0 | 6672 | 73.0 | 6041 | 77.3 | 71.3 |
| 23-Jun | 5490 | 84.4 | 6259 | 76.8 | 4245 | 66.6 | 8669 | 55.4 | 14676 | 68.7 | 10587 | 68.6 | 9605 | 85.4 | 9698 | 74.7 | 7189 | 78.7 | 6075 | 77.7 | 73.7 |
| 24-Jun | 5560 | 85.5 | 6436 | 78.9 | 4301 | 67.5 | 9419 | 60.2 | 15276 | 71.5 | 10865 | 70.4 | 9890 | 87.9 | 10274 | 79.1 | 7430 | 81.3 | 6118 | 78.3 | 77.1 |
| 25-Jun | 5597 | 86.1 | 6678 | 81.9 | 4382 | 68.8 | 9644 | 61.7 | 15967 | 74.7 | 11077 | 71.8 | 10095 | 89.7 | 10614 | 81.7 | 7527 | 82.4 | 6490 | 83.0 | 78.2 |
| 26-Jun | 5734 | 88.2 | 7060 | 86.6 | 4411 | 69.2 | 10019 | 64.1 | 16323 | 76.4 | 11836 | 76.7 | 10137 | 90.1 | 10754 | 82.8 | 7667 | 83.9 | 6732 | 86.1 | 80.4 |
| 27-Jun | 5909 | 90.9 | 7168 | 87.9 | 4460 | 70.0 | 11071 | 70.8 | 17161 | 80.3 | 12084 | 78.3 | 10180 | 90.5 | 10815 | 83.3 | 7800 | 85.4 | 6778 | 86.7 | 82.4 |
| 28-Jun | 6009 | 92.4 | 7253 | 88.9 | 4506 | 70.7 | 11441 | 73.2 | 17640 | 82.6 | 12347 | 80.0 | 10202 | 90.7 | 11419 | 87.9 | 7933 | 86.8 | 6872 | 87.9 | 84.1 |
| 29 Jun | 6018 | 92.6 | 7331 | 89.9 | 4808 | 75.5 | 11674 | 74.7 | 18038 | 84.4 | 13192 | 85.5 | 10400 | 92.4 | 11916 | 91.8 | 8067 | 88.3 | 6908 | 88.4 | 86.3 |
| 30-Jun | 6040 | 92.9 | 7387 | 90.6 | 4960 | 77.9 | 12071 | 77.2 | 18522 | 86.7 | 13312 | 86.3 | 10561 | 93.9 | 12039 | 92.7 | 8153 | 89.3 | 6947 | 88.9 | 87.6 |
| 01-Jul | 6144 | 94.5 | 7519 | 92.3 | 5231 | 82.1 | 12409 | 79.4 | 18886 | 88.4 | 13396 | 86.8 | 10656 | 94.7 | 12122 | 93.3 | 8221 | 89.9 | 6960 | 89.0 | 89.0 |
| 02-Jul | 6192 | 95.2 | 7533 | 92.4 | 5410 | 84.9 | 12769 | 81.7 | 19212 | 89.9 | 13430 | 87.0 | 10739 | 95.5 | 12338 | 95.0 | 8285 | 90.7 | 7186 | 91.9 | 90.4 |
| 03-Jul | 6238 | 95.9 | 7626 | 93.6 | 5488 | 86.1 | 6876 | 86.7 | 19277 | 90.2 | 13651 | 88.5 | 10809 | 96.1 | 12370 | 95.2 | 8395 | 91.9 | 7234 | 92.5 | 91.8 |
| 04-Jul | 6263 | 96.3 | 7626 | 93.6 | 5610 | 88.1 | 7006 | 88.4 | 19370 | 90.6 | 13815 | 89.5 | 10821 | 96.2 | 12465 | 95.9 | 8474 | 92.8 | 7266 | 92.9 | 92.8 |
| 05-Jul | 6270 | 96.4 | 7631 | 93.6 | 5710 | 89.6 | 7088 | 89.4 | 19398 | 90.8 | 14148 | 91.7 | 10834 | 96.3 | 12514 | 96.4 | 8503 | 93.1 | 7288 | 93.2 | 93.4 |
| 06-Jul | 6299 | 96.9 | 7634 | 93.7 | 5747 | 90.2 | 7172 | 90.4 | 19664 | 92.0 | 14251 | 92.4 | 10877 | 96.7 | 12549 | 96.6 | 8581 | 93.9 | 7368 | 94.2 | 94.1 |
| 07-Jul | 6308 | 97.0 | 7742 | 94.9 | 5839 | 91.7 | 7258 | 91.5 | 19883 | 93.0 | 14543 | 94.2 | 10894 | 96.8 | 12572 | 96.8 | 8660 | 94.8 | 7408 | 94.7 | 94.9 |
| 08-Jul | 6312 | 97.1 | 7793 | 95.6 | 5855 | 91.9 | 7345 | 92.6 | 20211 | 94.6 | 14667 | 95.0 | 10948 | 97.3 | 12589 | 96.9 | 8750 | 95.8 | 7438 | 95.1 | 95.5 |
| 09-Jul | 6342 | 97.5 | 7806 | 95.8 | 5994 | 94.1 | 7434 | 93.8 | 20410 | 95.5 | 14668 | 95.1 | 10953 | 97.4 | 12610 | 97.1 | 8755 | 95.8 | 7471 | 95.6 | 95.9 |
| 10-Jul | 6361 | 97.8 | 7829 | 96.1 | 6031 | 94.7 | 7499 | 94.6 | 20416 | 95.5 | 14669 | 95.1 | 10970 | 97.5 | 12636 | 97.3 | 8768 | 95.9 | 7530 | 96.3 | 96.3 |
| 11-Jul | 6371 | 97.9 | 7863 | 96.5 | 6040 | 94.8 | 7547 | 95.2 | 20449 | 95.7 | 14721 | 95.4 | 10970 | 97.5 | 12638 | 97.3 | 8840 | 96.8 | 7547 | 96.5 | 96.5 |
| 12-Jul | 6384 | 98.2 | 7897 | 96.9 | 6119 | 96.0 | 7570 | 95.5 | 20493 | 95.9 | 14862 | 96.3 | 10971 | 97.5 | 12640 | 97.3 | 8891 | 97.3 | 7573 | 96.9 | 97.0 |
| 13-Jul | 6417 | 98.7 | 7935 | 97.4 | 6180 | 97.0 | 7609 | 95.9 | 20562 | 96.2 | 14943 | 96.8 | 10973 | 97.5 | 12691 | 97.7 | 8916 | 97.6 | 7587 | 97.0 | 97.4 |
| 14-Jul | 6432 | 98.9 | 7962 | 97.7 | 6194 | 97.2 | 7632 | 96.2 | 20836 | 97.5 | 14962 | 97.1 | 10999 | 97.8 | 12709 | 97.9 | 8958 | 98.1 | 7615 | 97.4 | 97.8 |
| 15-Jul | 6438 | 99.0 | 7974 | 97.8 | 6197 | 97.3 | 7650 | 96.5 | 20881 | 97.7 | 14991 | 97.5 | 11025 | 97.9 | 12711 | 97.9 | 8967 | 98.2 | 7649 | 97.8 | 97.9 |
| 16-Jul | 6438 | 99.0 | 7983 | 97.9 | 6222 | 97.7 | 7691 | 96.9 | 20948 | 98.0 | 14998 | 97.2 | 11042 | 98.1 | 12715 | 97.9 | 8984 | 98.4 | 7659 | 97.9 | 98.1 |
| 17-Jul | 6444 | 99.1 | 7986 | 97.9 | 6259 | 97.2 | 7706 | 97.2 | 20949 | 98.0 | 15013 | 97.3 | 11042 | 98.1 | 12721 | 97.9 | 9003 | 98.6 | 7682 | 98.3 | 98.2 |
| 18-Jul | 6448 | 99.2 | 7993 | 98.1 | 6283 | 98.6 | 7723 | 97.4 | 20963 | 98.1 | 15019 | 97.3 | 11042 | 98.1 | 12728 | 98.0 | 9018 | 98.7 | 7704 | 98.5 | 98.3 |

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Appendix G5. (Page 3 of 4).

| | 1984 | | 1985 | | 1986 | | 1987 | | 1988 | | 1989 | | 1990 | | 1991 | | 1992 | | 1993 | | 1984-93 |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| Date | No. | % | No. | % | No. | % | No. | % | No. | % | No. | % | No. | % | No. | % | No. | % | No. | % | Avg. % |
| 19-Jul | 6449 | 99.2 | 7994 | 98.1 | 6289 | 98.7 | 7739 | 97.6 | 20965 | 98.1 | 15077 | 97.7 | 11042 | 98.1 | 12728 | 98.0 | 9020 | 98.7 | 7704 | 98.5 | 98.4 |
| 20-Jul | 6458 | 99.3 | 8001 | 98.2 | 6296 | 98.8 | 7755 | 97.8 | 21033 | 98.4 | 15092 | 97.8 | 11051 | 98.2 | 12733 | 98.0 | 9030 | 98.9 | 7706 | 98.6 | 98.5 |
| 21-Jul | 6465 | 99.4 | 8003 | 98.2 | 6299 | 98.9 | 7773 | 98.0 | 21058 | 98.5 | 15127 | 98.0 | 11076 | 98.4 | 12749 | 98.2 | 9054 | 99.1 | 7708 | 98.6 | 98.6 |
| 22-Jul | 6465 | 99.4 | 8004 | 98.2 | 6312 | 98.1 | 7787 | 98.2 | 21065 | 98.6 | 15160 | 98.2 | 11087 | 98.5 | 12795 | 98.5 | 9060 | 99.2 | 7713 | 98.6 | 98.7 |
| 23-Jul | 6465 | 99.4 | 8018 | 98.4 | 6312 | 98.1 | 7799 | 98.4 | 21085 | 98.7 | 15192 | 98.4 | 11093 | 98.6 | 12809 | 98.6 | 9060 | 99.2 | 7716 | 98.7 | 98.8 |
| 24-Jul | 6467 | 99.5 | 8020 | 98.4 | 6312 | 98.1 | 7810 | 98.5 | 21093 | 98.7 | 15209 | 98.6 | 11105 | 98.7 | 12835 | 98.8 | 9069 | 99.3 | 7749 | 99.1 | 98.9 |
| 25-Jul | 6468 | 99.5 | 8023 | 98.4 | 6312 | 98.1 | 7819 | 98.6 | 21113 | 98.8 | 15210 | 98.6 | 11107 | 98.7 | 12835 | 98.8 | 9076 | 99.4 | 7749 | 99.1 | 98.9 |
| 26-Jul | 6470 | 99.5 | 8048 | 98.7 | 6312 | 98.1 | 7826 | 98.7 | 21123 | 98.8 | 15241 | 98.8 | 11115 | 98.8 | 12836 | 98.8 | 9080 | 99.4 | 7757 | 99.2 | 99.1 |
| 27-Jul | 6473 | 99.6 | 8049 | 98.8 | 6312 | 99.1 | 7837 | 98.8 | 21135 | 98.9 | 15257 | 98.9 | 11118 | 98.8 | 12881 | 99.2 | 9081 | 99.4 | 7758 | 99.2 | 99.1 |
| 28-Jul | 6476 | 99.6 | 8056 | 98.8 | 6312 | 99.1 | 7844 | 98.9 | 21173 | 99.1 | 15258 | 98.9 | 11133 | 98.9 | 12886 | 99.2 | 9086 | 99.5 | 7771 | 99.4 | 99.2 |
| 29-Jul | 6476 | 99.6 | 8063 | 98.9 | 6312 | 99.1 | 7848 | 98.9 | 21184 | 99.1 | 15268 | 98.9 | 11158 | 99.2 | 12892 | 99.3 | 9088 | 99.5 | 7778 | 99.5 | 99.3 |
| 30-Jul | 6477 | 99.6 | 8064 | 98.9 | 6312 | 99.1 | 7862 | 99.1 | 21204 | 99.2 | 15310 | 99.2 | 11169 | 99.3 | 12897 | 99.3 | 9091 | 99.5 | 7781 | 99.5 | 99.3 |
| 31-Jul | 6477 | 99.6 | 8064 | 98.9 | 6325 | 99.3 | 7865 | 99.2 | 21206 | 99.2 | 15318 | 99.3 | 11180 | 99.4 | 12901 | 99.3 | 9094 | 99.6 | 7781 | 99.5 | 99.4 |
| 01-Aug | 6478 | 99.6 | 8067 | 98.9 | 6333 | 99.4 | 7871 | 99.3 | 21210 | 99.3 | 15323 | 99.3 | 11192 | 99.5 | 12901 | 99.3 | 9098 | 99.6 | 7788 | 99.6 | 99.4 |
| 02-Aug | 6478 | 99.6 | 8073 | 99.0 | 6336 | 99.5 | 7873 | 99.3 | 21212 | 99.3 | 15341 | 99.4 | 11200 | 99.6 | 12906 | 99.4 | 9100 | 99.6 | 7788 | 99.6 | 99.5 |
| 03-Aug | 6481 | 99.7 | 8081 | 99.1 | 6339 | 99.5 | 7878 | 99.3 | 21225 | 99.3 | 15354 | 99.5 | 11209 | 99.6 | 12915 | 99.4 | 9105 | 99.7 | 7789 | 99.6 | 99.5 |
| 04-Aug | 6482 | 99.7 | 8085 | 99.2 | 6342 | 99.5 | 7884 | 99.4 | 21236 | 99.4 | 15360 | 99.5 | 11216 | 99.7 | 12922 | 99.5 | 9108 | 99.7 | 7795 | 99.7 | 99.6 |
| 05-Aug | 6482 | 99.7 | 8092 | 99.3 | 6344 | 99.6 | 7890 | 99.5 | 21250 | 99.4 | 15367 | 99.6 | 11218 | 99.7 | 12926 | 99.5 | 9111 | 99.7 | 7795 | 99.7 | 99.6 |
| 06-Aug | 6483 | 99.7 | 8097 | 99.3 | 6345 | 99.6 | 7894 | 99.6 | 21272 | 99.5 | 15375 | 99.6 | 11222 | 99.7 | 12936 | 99.6 | 9115 | 99.8 | 7796 | 99.7 | 99.6 |
| 07-Aug | 6484 | 99.7 | 8115 | 99.6 | 6346 | 99.6 | 7896 | 99.6 | 21289 | 99.6 | 15378 | 99.7 | 11228 | 99.8 | 12938 | 99.6 | 9119 | 99.8 | 7797 | 99.7 | 99.7 |
| 08-Aug | 6486 | 99.8 | 8115 | 99.6 | 6350 | 99.7 | 7900 | 99.6 | 21291 | 99.6 | 15383 | 99.7 | 11233 | 99.8 | 12942 | 99.7 | 9122 | 99.9 | 7798 | 99.7 | 99.7 |
| 09-Aug | 6488 | 99.8 | 8115 | 99.6 | 6350 | 99.7 | 7902 | 99.7 | 21301 | 99.7 | 15388 | 99.7 | 11233 | 99.8 | 12947 | 99.7 | 9125 | 99.9 | 7799 | 99.7 | 99.7 |
| 10-Aug | 6488 | 99.8 | 8129 | 99.7 | 6354 | 99.7 | 7908 | 99.7 | 21311 | 99.7 | 15396 | 99.8 | 11237 | 99.9 | 12954 | 99.7 | 9126 | 99.9 | 7808 | 99.9 | 99.8 |
| 11-Aug | 6490 | 99.8 | 8132 | 99.8 | 6357 | 99.8 | 7912 | 99.8 | 21330 | 99.8 | 15398 | 99.8 | 11238 | 99.9 | 12972 | 99.9 | 9130 | 99.9 | 7808 | 99.9 | 99.8 |
| 12-Aug | 6490 | 99.8 | 8132 | 99.8 | 6360 | 99.8 | 7915 | 99.8 | 21334 | 99.8 | 15406 | 99.8 | 11239 | 99.9 | 12978 | 99.9 | 9130 | 99.9 | 7809 | 99.9 | 99.9 |
| 13-Aug | 6490 | 99.8 | 8133 | 99.8 | 6360 | 99.8 | 7916 | 99.8 | 21336 | 99.8 | 15408 | 99.8 | 11239 | 99.9 | 12988 | 100.0 | 9131 | 99.9 | 7809 | 99.9 | 99.9 |
| 14-Aug | 6491 | 99.8 | 8134 | 99.8 | 6360 | 99.8 | 7918 | 99.9 | 21340 | 99.9 | 15414 | 99.9 | 11242 | 99.9 | 12988 | 100.0 | 9131 | 99.9 | 7809 | 99.9 | 99.9 |
| 15-Aug | 6492 | 99.9 | 8135 | 99.8 | 6361 | 99.8 | 7920 | 99.9 | 21344 | 99.9 | 15421 | 99.9 | 11242 | 99.9 | 12988 | 100.0 | 9131 | 99.9 | 7813 | 99.9 | 99.9 |
| 16-Aug | 6493 | 99.9 | 8136 | 99.8 | 6362 | 99.9 | 7923 | 99.9 | 21347 | 99.9 | 15421 | 99.9 | 11245 | 99.9 | 12988 | 100.0 | 9133 | 99.9 | 7817 | 99.9 | 99.9 |
| 17-Aug | 6496 | 99.9 | 8137 | 99.8 | 6365 | 99.9 | 7924 | 99.9 | 21356 | 99.9 | 15425 | 99.9 | 11246 | 99.9 | 12988 | 100.0 | 9134 | 99.9 | 7818 | 99.9 | 99.9 |

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Appendix G5. (Page 4 of 4).

| | 1984 | | 1985 | | 1986 | | 1987 | | 1988 | | 1989 | | 1990 | | 1991 | | 1992 | | 1993 | | 1984-93 |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| Date | No. | % | No. | % | No. | % | No. | % | No. | % | No. | % | No. | % | No. | % | No. | % | No. | % | Avg. % |
| 18-Aug | 6499 | 99.9 | 8138 | 99.8 | 6368 | 99.9 | 7924 | 99.9 | 21360 | 99.9 | 15428 | 99.9 | 11246 | 99.9 | 12988 | 100.0 | 9134 | 99.9 | 7818 | 99.9 | 99.9 |
| 19-Aug | 6500 | 99.9 | 8139 | 99.9 | 6369 | 99.9 | 7925 | 99.9 | 21364 | 99.9 | 15429 | 99.9 | 11249 | 99.9 | 12988 | 100.0 | 9135 | 100.0 | 7818 | 99.9 | 99.9 |
| 20-Aug | 6501 | 99.9 | 8140 | 99.9 | 6369 | 99.2 | 7925 | 99.9 | 21367 | 99.9 | 15429 | 99.9 | 11249 | 99.9 | 12988 | 100.0 | 9135 | 100.0 | 7818 | 99.9 | 99.9 |
| 21-Aug | 6502 | 100.0 | 8141 | 99.9 | 6370 | 99.9 | 7927 | 99.9 | 21368 | 99.9 | 15430 | 99.9 | 11249 | 99.9 | 12988 | 100.0 | 9135 | 100.0 | 7818 | 99.9 | 99.9 |
| 22-Aug | 6502 | 100.0 | 8142 | 99.9 | 6371 | 100.0 | 7927 | 99.9 | 21369 | 99.9 | 15431 | 99.9 | 11249 | 99.9 | 12988 | 100.0 | 9135 | 100.0 | 7819 | 100.0 | 99.9 |
| 23-Aug | 6502 | 100.0 | 8144 | 99.9 | 6371 | 100.0 | 7928 | 99.9 | 21369 | 99.9 | 15431 | 99.9 | 11249 | 99.9 | 12988 | 100.0 | 9135 | 100.0 | 7819 | 100.0 | 99.9 |
| 24-Aug | 6502 | 100.0 | 8144 | 99.9 | 6371 | 100.0 | 7929 | 99.9 | 21370 | 100.0 | 15431 | 99.9 | 11249 | 99.9 | 12988 | 100.0 | 9135 | 100.0 | 7819 | 100.0 | 99.9 |
| 25-Aug | 6502 | 100.0 | 8146 | 99.9 | 6371 | 100.0 | 7929 | 99.9 | 21370 | 100.0 | 15431 | 99.9 | 11249 | 99.9 | 12988 | 100.0 | 9135 | 100.0 | 7819 | 100.0 | 99.9 |
| 26-Aug | 6502 | 100.0 | 8148 | 99.9 | 6371 | 100.0 | 7929 | 99.9 | 21370 | 100.0 | 15431 | 99.9 | 11249 | 99.9 | 12988 | 100.0 | 9135 | 100.0 | 7819 | 100.0 | 99.9 |
| 27-Aug | 6502 | 100.0 | 8149 | 99.9 | 6371 | 100.0 | 7930 | 100.0 | 21370 | 100.0 | 15431 | 99.9 | 11249 | 99.9 | 12988 | 100.0 | 9135 | 100.0 | 7819 | 100.0 | 99.9 |
| 28-Aug | 6502 | 100.0 | 8151 | 100.0 | 6371 | 100.0 | 7930 | 100.0 | 21370 | 100.0 | 15431 | 99.9 | 11249 | 99.9 | 12988 | 100.0 | 9135 | 100.0 | 7819 | 100.0 | 99.9 |
| 29-Aug | 6502 | 100.0 | 8151 | 100.0 | 6371 | 100.0 | 7930 | 100.0 | 21370 | 100.0 | 15432 | 100.0 | 11249 | 99.9 | 12988 | 100.0 | 9135 | 100.0 | 7819 | 100.0 | 99.9 |
| 30-Aug | 6502 | 100.0 | 8151 | 100.0 | 6371 | 100.0 | 7930 | 100.0 | 21370 | 100.0 | 15432 | 100.0 | 11249 | 99.9 | 12988 | 100.0 | 9135 | 100.0 | 7819 | 100.0 | 99.9 |
| 31-Aug | 6502 | 100.0 | 8151 | 100.0 | 6371 | 100.0 | 7930 | 100.0 | 21370 | 100.0 | 15432 | 100.0 | 11250 | 99.9 | 12988 | 100.0 | 9135 | 100.0 | 7819 | 100.0 | 99.9 |
| 01-Sept | 6502 | 100.0 | 8151 | 100.0 | 6371 | 100.0 | 7930 | 100.0 | 21370 | 100.0 | 15432 | 100.0 | 11250 | 99.9 | 12988 | 100.0 | 9135 | 100.0 | 7819 | 100.0 | 99.9 |
| 02-Sept | 6502 | 100.0 | 8151 | 100.0 | 6371 | 100.0 | 7930 | 100.0 | 21370 | 100.0 | 15432 | 100.0 | 11251 | 100.0 | 12988 | 100.0 | 9135 | 100.0 | 7819 | 100.0 | 100.0 |
| Season Total | 6,502 | | 8,151 | | 6,371 | | 7,930 | | 21,370 | | 15,432 | | 11,251 | | 12,988 | | 9,135 | | 7,819 | | |

Appendix G6. Chignik River chinook salmon escapement, time of entry 1984-1993[a].

| Date | 1984 % Total | 1985 % Total | 1986 % Total | 1987 % Total | 1988 % Total | 1989 % Total | 1990 % Total | 1991 % Total | 1992 % Total | 1993 % Total | 1984-93 % Avg. |
|---|---|---|---|---|---|---|---|---|---|---|---|
| 20-Jun | 2 | 1 | 1 | 1 | 0 | 1 | 1 | 1 | 1 | 1 | 1 |
| 21-Jun | 3 | 1 | 3 | 1 | 0 | 1 | 1 | 2 | 1 | 1 | 1 |
| 22-Jun | 3 | 1 | 4 | 1 | 1 | 1 | 1 | 2 | 1 | 1 | 1 |
| 23-Jun | 3 | 1 | 5 | 1 | 1 | 1 | 1 | 2 | 1 | 2 | 2 |
| 24-Jun | 4 | 1 | 7 | 2 | 1 | 1 | 1 | 2 | 2 | 4 | 2 |
| 25-Jun | 4 | 1 | 8 | 2 | 1 | 1 | 3 | 3 | 4 | 5 | 3 |
| 26-Jun | 4 | 1 | 10 | 2 | 2 | 1 | 5 | 3 | 4 | 7 | 4 |
| 27-Jun | 4 | 1 | 11 | 5 | 3 | 2 | 5 | 4 | 5 | 9 | 5 |
| 28-Jun | 12 | 2 | 13 | 6 | 3 | 2 | 6 | 6 | 9 | 11 | 7 |
| 29 Jun | 14 | 2 | 14 | 7 | 5 | 10 | 7 | 6 | 11 | 14 | 9 |
| 30-Jun | 16 | 4 | 15 | 8 | 6 | 10 | 10 | 7 | 15 | 16 | 11 |
| 01-Jul | 17 | 10 | 17 | 9 | 6 | 12 | 12 | 9 | 18 | 17 | 13 |
| 02-Jul | 18 | 12 | 18 | 13 | 7 | 13 | 14 | 11 | 21 | 19 | 15 |
| 03-Jul | 25 | 13 | 20 | 14 | 13 | 23 | 16 | 13 | 23 | 23 | 18 |
| 04-Jul | 28 | 13 | 27 | 15 | 19 | 28 | 19 | 15 | 28 | 29 | 22 |
| 05-Jul | 29 | 14 | 32 | 16 | 26 | 29 | 23 | 19 | 34 | 33 | 25 |
| 06-Jul | 35 | 20 | 35 | 17 | 27 | 30 | 26 | 22 | 37 | 38 | 29 |
| 07-Jul | 50 | 29 | 38 | 19 | 30 | 35 | 30 | 23 | 41 | 42 | 34 |
| 08-Jul | 54 | 32 | 40 | 24 | 33 | 38 | 36 | 36 | 48 | 43 | 38 |
| 09-Jul | 58 | 32 | 48 | 29 | 41 | 40 | 46 | 42 | 53 | 44 | 43 |
| 10-Jul | 62 | 33 | 51 | 39 | 57 | 45 | 48 | 45 | 58 | 49 | 49 |
| 11-Jul | 65 | 35 | 52 | 42 | 66 | 46 | 50 | 50 | 64 | 56 | 53 |
| 12-Jul | 67 | 39 | 60 | 45 | 71 | 48 | 53 | 52 | 69 | 61 | 57 |
| 13-Jul | 69 | 46 | 64 | 52 | 72 | 58 | 55 | 56 | 72 | 68 | 61 |
| 14-Jul | 75 | 48 | 69 | 54 | 74 | 61 | 61 | 60 | 75 | 74 | 65 |
| 15-Jul | 78 | 55 | 73 | 63 | 77 | 67 | 66 | 63 | 81 | 77 | 70 |
| 16-Jul | 80 | 60 | 76 | 68 | 78 | 68 | 68 | 68 | 82 | 82 | 73 |
| 17-Jul | 85 | 61 | 78 | 70 | 81 | 69 | 71 | 69 | 84 | 85 | 75 |
| 18-Jul | 87 | 66 | 81 | 73 | 84 | 70 | 75 | 69 | 86 | 88 | 78 |

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Appendix G6. (Page 2 of 2).

| Date | 1984 % Total | 1985 % Total | 1986 % Total | 1987 % Total | 1988 % Total | 1989 % Total | 1990 % Total | 1991 % Total | 1992 % Total | 1993 % Total | 1984-93 % Total |
|---|---|---|---|---|---|---|---|---|---|---|---|
| 19-Jul | 89 | 68 | 82 | 74 | 86 | 72 | 78 | 72 | 88 | 93 | 80 |
| 20-Jul | 89 | 70 | 87 | 79 | 88 | 74 | 81 | 79 | 90 | 95 | 83 |
| 21-Jul | 90 | 73 | 89 | 84 | 90 | 75 | 86 | 80 | 91 | 95 | 86 |
| 22-Jul | 92 | 78 | 90 | 87 | 92 | 83 | 90 | 87 | 92 | 95 | 89 |
| 23-Jul | 94 | 80 | 94 | 90 | 92 | 87 | 91 | 90 | 93 | 96 | 91 |
| 24-Jul | 94 | 82 | 96 | 92 | 93 | 89 | 92 | 93 | 94 | 97 | 92 |
| 25-Jul | 95 | 85 | 96 | 96 | 94 | 90 | 93 | 95 | 95 | 97 | 94 |
| 26-Jul | 96 | 88 | 97 | 97 | 96 | 92 | 95 | 96 | 96 | 98 | 95 |
| 27-Jul | 97 | 92 | 98 | 97 | 96 | 93 | 97 | 97 | 97 | 98 | 96 |
| 28-Jul | 99 | 95 | 98 | 98 | 98 | 95 | 98 | 98 | 97 | 99 | 98 |
| 29-Jul | 99 | 97 | 99 | 99 | 99 | 99 | 99 | 99 | 99 | 99 | 99 |
| 30-Jul | 99 | 98 | 99 | 99 | 99 | 99 | 99 | 99 | 99 | 99 | 99 |
| 31-Jul | 100 | 100 | 100 | 100 | 100 | 100 | 100 | 100 | 100 | 100 | 100 |
| Season Total | 5,548 | 3,144 | 3,612 | 2,624 | 4,868 | 3,316 | 4,364 | 4,545 | 3,806 | 1,946 | |

[a] Percentages are based on weir passage estimates and a 3-day lag time applied to catches made in Chignik Lagoon (statistical area 271-10), to approximate arrival at the weir. In addition, percentages do not include 1- and 2-ocean chinook which cannot be distinguished from sockeye salmon in the commercial fishery.

1989 KMA EMERGENCY ORDERS

| Emergency Order Number | Effective Date | Action/Justification |
|---|---|---|
| 2-SS-4-17-89 | 9/11/89 12:01 a.m. | Extended the closure for fresh water streams flowing into Monashka and Chiniak Bays to sport fishing for salmon beginning 12:01 a.m. September 11, 1989 through 12:01 a.m. October 1, 1989 including the Buskin River upstream of Bridge #1. Low escapement of coho salmon and late spawning of pink salmon was the stated justification. |
| 2-SS-4-18-89 | 9/18/89 | Rescinded E.O. # 2-SS-4-17-89. Surveys and weir counts indicated sufficient escapement had been achieved and more fish were returning daily. |

Appendix H

Emergency Orders Issued for the KMA
During 1989, 1990, 1991, 1992, and 1993

1990 KMA EMERGENCY ORDERS

| Emergency Order Number | Effective Date | Action/Justification |
|---|---|---|
| 2-SS-4-27-90 | 9/6/90 Noon | Closed Morris Cove Creek, Humpy Cove Creek, Summers Bay Creek, Captains Bay Creek, Unalaska Creek from the outlet of Unalaska Lake to the downstream end of the Church Hole to sport fishing. Extremely low water hindered coho escapement plus illegal snagging was increasingly common. |
| 2-SS-4-31-90 | 9/21/90 6:00 a.m. | Above waters were reopened, with the exception of Unalaska Creek from the Iliulik Bridge to the Church Hole. Normal water flows were allowing escapement to occur. |
| 2-SS-4-28-90 | 9/11/90 12:01 a.m. | Extended the closure of salmon sport fishing upstream of the highway in streams flowing into Monashka and Chiniak Bays. The Buskin River remained closed above Bridge #1. Coho escapement in the Buskin, Roslyn, American and Olds were below average. |
| 2-SS-4-33-90 | 9/26/90 6:00 a.m. | Above waters were opened to salmon sport fishing. Normal coho escapement was being achieved. |

1991 KMA EMERGENCY ORDERS

| Emergency Order Number | Effective Date | Action/Justification |
|---|---|---|
| 2-PS-4-11-91 | 6/15/91 Midnight | Closed the fresh waters of Unalaska, Iliukliuk, Humpy, and Summers Cove due to low escapements and high harvests. |

1992 KMA EMERGENCY ORDERS (Continued)

| Emergency Order Number | Effective Date | Action/Justification |
|---|---|---|
| 2-SS-4-32-92 | 9/11/92 | Coho salmon exhibit wide ranging dates of when they return which vary from year to year and are often influenced by weather conditions and water levels in streams. The Department will continue to monitor escapement into the Buskin River and other indexed streams and if escapement improves, waters above the Chiniak Highway will be opened to fishing. |
| 2-SS-4-35-92 | 10/7/92 | Coho salmon escapements into Chiniak and Monashka Bay streams have been late and below average in number. In order to ensure that sufficient spawning escapement occurred so that strong returns would continue in the future, sport fishing for salmon above the Chiniak Highway and Bridge #1 on the Buskin River was closed.<br><br>The Department has continued to monitor escapements, and in early October minimum spawning goals were surpassed so that a sport fish harvest above the Chiniak Highway can now occur without damaging the reproductive potential of the coho stocks. The Buskin River is the major producer of coho in Chiniak Bay, and the weir allows accurate counts of escapement. On October 1 the weir count was 6,000 coho with daily counts averaging about 100 coho. Since minimum escapement goals have been exceeded at this time and because fish are still entering the rivers, flowing waters above the Chiniak Highway and above Bridge #1 on the Buskin River will be open to salmon fishing effective Wednesday, October 7. |

1992 KMA EMERGENCY ORDERS

| Emergency Order Number | Effective Date | Action/Justification |
|---|---|---|
| 2-PS-4-30-92 | 8/17/92 | The majority of streams along the Kodiak Road System Zone are experiencing the third consecutive year of below average pink salmon escapements. Eight index streams were surveyed on August 13 and minimum escapement goals are expected to be reached in only two of these streams. The Buskin, American and Olds rivers are the major pink salmon producing streams in Chiniak Bay and only about one half of the minimum escapement goal is expected to be reached in these streams. In order to conserve the pink salmon resources along the Kodiak Road System Zone and still allow for a limited harvest where stocks are not severely depressed, the bag and possession limit for pink salmon is being reduced to 2 fish and the Buskin, American and Olds rivers are being closed to pink salmon fishing. |
| 2-SS-4-32-92 | 9/11/92 | Coho salmon escapement counts through the Buskin River weir are low for this time of year, and the count of 1,187 as of September 8 may indicate a below average return. The 1992 Buskin River parent year had the lowest coho escapement since a weir was installed in 1985, and this also indicates that the 1992 coho return may be weak. Other index streams in Chiniak Bay also have had low numbers of coho in them.<br><br>In order to ensure that escapement goals are met and that the reproductive potential of the coho stocks are not damaged, salmon fishing will remain closed above the highway for streams flowing into Monashka and Chiniak Bays, with the exception of the Buskin River which will remain closed above Bridge No. 1. This enclosure does not affect saltwater fishing or streams that do not flow into Chiniak or Monashka Bay. |

1993 KMA EMERGENCY ORDERS

| Emergency Order Number | Effective Date | Action/Justification |
|---|---|---|
| 2-KS-4-09-93 | 6/3/93 | The Buskin River was open to sport fishing for king salmon. Returning adult king salmon from the Mill Bay stocking project were straying into the Buskin River. Opening the Buskin River to king salmon fishing would allow these fish to be harvested. |

# Appendix I

## Prioritized Synopses of Access Projects Recommended for the KMA

Russian River Parking Area: This small stream flows into Womens Bay, located just outside of the city of Kodiak on the Chiniak Highway. The intertidal reach of this stream is a popular sport fishing site during July, August and September when the pink and coho salmon are running. At the present time, anglers wishing to fish this stream are forced to park on the shoulder of the Chiniak Highway. During periods of high use a dangerous pedestrian vs. traffic situation develops as anglers move out from between vehicles to cross the highway. The goal of this project is to utilize Kodiak Borough land located on the outbound side of the river, upstream of the bridge, to construct a parking area adequate for approximately 30 vehicles. A short walkway, which would extend from the parking area, under the road bridge, to the most popular fishing site would also be constructed. The proposed location of the parking area has been substantially modified in the past, however much of the area will still be considered wetlands. Upon completion, this project should require only garbage pickup as a continuing expense. The projected cost of the Russian River parking area and trail is $60,000.

Pasagshak Recreational Area Footbridge Development: The Pasagshak River is located on the Kodiak Island road system approximately 40 miles from the city of Kodiak. The lower 2 miles of this lake system support popular sport fisheries for Dolly Varden and pink, sockeye and coho salmon. State Parks has a State Recreational Area at the mouth of the Pasagshak River that consists of a few picnic tables and a small parking area. The configuration of the mouth area is such that the Pasagshak River divides the Recreation Area into roadside and nonroad accessible beach areas. The purpose of this project is to connect the beach area with the roadside through construction of a footbridge. This would enable anglers to fish the "far" side of the river and also an extensive length of beach. The design staff of State Parks was asked to estimate the cost of a suitable footbridge. The estimated cost of this project is $70,000.

American and Olds Rivers Roadside Parking Areas: These two popular sport fishing streams are located along the Chiniak Highway in Middle and Kalsin bays respectively. Currently, anglers using these sites park either on the highway or immediately adjacent to the highway on undeveloped land. Those parking on the highway are creating the same public safety concerns expressed over the proposed Russian River parking area. Those anglers parking off road are causing some deterioration of road side habitat. A thorough search of land status at these sites is underway. An update will be forthcoming. These sites will require continued garbage pickup after completion. These parking areas should cost on the order of $35,000 each assuming no land acquisition costs.

Gertrude Lake Access Trail and Handicap Fishing Pier: Gertrude Lake is located adjacent to the ADNR Division of Parks and Outdoor Recreation headquarters in Fort Abercrombie State Park. The ADF&G Sport Fish Division has stocked this lake with rainbow trout for many years and intends to continue those efforts. State Parks promotes this area and has developed adequate parking; what is still needed is an access trail developed with the handicapped in mind and also a small fishing pier similarly designed. Upon completion, this facility would be managed and maintained by State Parks. State Parks has estimated the cost of this development to be $20,000.

Womens Bay Boat Launch and Parking Area: The purpose of this project is to design and construct a boat launch for use by recreational boaters in Womens Bay, Kodiak. Womens Bay is located along the Chiniak Highway just beyond the Coast Guard Base. The shoreline of Womens Bay is a popular location for fishing for pink and coho salmon. Boat launching facilities located on the Coast Guard Base are off limits to the civilian boaters and the nearest public boat launch is located in the Kodiak City Harbor, approximately 6 miles distant when traveling by boat. The waters of Womens Bay are sheltered and typically suitable for travel by small boat even when the waters of Chiniak Bay are too rough. Two shoreline sites have been identified as potential locations for this facility. We are currently researching the ownership of the two sites. The estimated cost of this proposed project is $250,000.

Near Island Shoreline Fishing Access Development: The purpose of this project is to design and construct a trail system and shoreline fishing sites on Near Island, Kodiak. There is currently no shoreline area located within the downtown area of Kodiak where anglers have legal access to the waterfront for the purpose of sport fishing. Near Island is located adjacent to the down town area of the city of Kodiak and is joined to Kodiak by a highway bridge. Salmon and various other finfish are available from the shoreline of Near Island, however pedestrian access to any shoreline location is difficult because of steep, rocky banks leading down to the water. A limited road system provides access to Dog Bay on Near Island where a major small and large boat harbor and boat launch facility has been developed. Parking is also available. Development of a simple trail system and flattened sites from which people could fish would complement other development on Near Island and provide shoreline fishing access in the city of Kodiak. Land status is currently being researched. The estimated cost of this project is $30,000.

Appendix J

KMA sport fish effort, catch, and harvest by fishery and species, from Mills statewide harvest summary, 1992

Appendix J1. Kodiak Area[a] sport fish harvest and effort by fisheries and species[b], 1992.

| | Anglers | Trips | Days Fished | KI[c] | KS[c] | SS | LL | RS | PS | CS | DV AC | SH | RT | GR | SM | HA | RF | LC | RCL | OTHER |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| SALTWATER: | | | | | | | | | | | | | | | | | | | | |
| Boat - Chiniak Bay Area | 4,426 | 11,281 | 12,842 | 26 | 297 | 996 | 0 | 148 | 733 | 68 | 115 | 8 | 0 | 0 | 0 | 4,954 | 4,049 | 690 | 0 | 541 |
| Boat - Afognak Island Area | 1,845 | 3,178 | 4,584 | 9 | 39 | 883 | 0 | 238 | 110 | 0 | 107 | 0 | 0 | 0 | 0 | 1,412 | 707 | 354 | 0 | 32 |
| Boat - Barren Islands | 1,571 | 1,209 | 1,718 | 9 | 0 | 8 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 2,047 | 60 | 93 | 0 | 87 |
| Boat - Whale Passage | 324 | 386 | 587 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 384 | 43 | 9 | 0 | 22 |
| Boat - Shuyak Harbor | 274 | 586 | 1,099 | 0 | 0 | 324 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 234 | 0 | 28 | 0 | 0 |
| Boat - Other | 2,063 | 4,121 | 5,490 | 9 | 56 | 710 | 0 | 264 | 293 | 8 | 196 | 8 | 0 | 0 | 140 | 1,436 | 267 | 261 | 0 | 282 |
| Shoreline - Chiniak Bay Area | 1,595 | 3,976 | 5,107 | 0 | 23 | 372 | 0 | 0 | 603 | 16 | 803 | 16 | 0 | 0 | 0 | 117 | 354 | 19 | 595 | 22 |
| Shoreline - Afognak Island Area | 859 | 1,133 | 1,549 | 0 | 0 | 1,441 | 0 | 616 | 9 | 0 | 131 | 16 | 0 | 0 | 0 | 101 | 172 | 0 | 0 | 0 |
| Shoreline - Mill Bay | 224 | 1,446 | 1,291 | 0 | 117 | 599 | 0 | 0 | 9 | 0 | 8 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 |
| Shoreline - Other | 606 | 1,467 | 2,218 | 0 | 0 | 307 | 0 | 33 | 356 | 0 | 180 | 0 | 0 | 0 | 0 | 175 | 0 | 0 | 378 | 22 |
| SALTWATER TOTAL | 9,274[d] | 28,783 | 36,485 | 53 | 532 | 5,640 | 0 | 1,299 | 2,113 | 92 | 1,540 | 48 | 0 | 0 | 140 | 10,860 | 5,652 | 1,454 | 973 | 1,008 |
| FRESHWATER: | | | | | | | | | | | | | | | | | | | | |
| Buskin River | 3,952 | 14,073 | 15,482 | 0 | 0 | 1,474 | 0 | 1,981 | 1,557 | 8 | 2,319 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 |
| Pasagshak River | 2,393 | 4,724 | 6,359 | 0 | 0 | 1,733 | 0 | 427 | 403 | 273 | 352 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 54 |
| Karluk River and Lagoon | 1,658 | 2,182 | 5,430 | 115 | 741 | 170 | 0 | 798 | 9 | 0 | 262 | 16 | 24 | 0 | 0 | 0 | 0 | 0 | 0 | 0 |
| American River | 1,583 | 2,493 | 3,276 | 0 | 0 | 583 | 0 | 0 | 513 | 8 | 360 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 |
| Olds River (or Creek) | 1,895 | 4,026 | 5,079 | 0 | 0 | 1,085 | 0 | 0 | 476 | 129 | 360 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 |
| Red River (Ayakulik) | 1,010 | 835 | 3,340 | 97 | 679 | 526 | 0 | 633 | 0 | 0 | 41 | 8 | 8 | 0 | 0 | 0 | 0 | 0 | 0 | 0 |
| Saltery Creek | 237 | 449 | 480 | 0 | 0 | 235 | 0 | 197 | 18 | 15 | 25 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 |
| Saltery Cove Streams | 299 | 536 | 501 | 0 | 0 | 462 | 0 | 321 | 64 | 15 | 401 | 0 | 16 | 0 | 0 | 0 | 0 | 0 | 0 | 0 |
| Other Streams | 1,552 | 4,284 | 5,553 | 0 | 0 | 1,486 | 0 | 477 | 751 | 85 | 1,384 | 16 | 56 | 0 | 0 | 0 | 0 | 0 | 0 | 0 |
| Roadside Lakes | 769 | 1,817 | 2,261 | 0 | 0 | 137 | 151 | 66 | 0 | 0 | 230 | 0 | 901 | 120 | 0 | 0 | 0 | 0 | 0 | 0 |
| Other Lakes | 335 | 498 | 531 | 0 | 0 | 137 | 0 | 41 | 0 | 0 | 115 | 8 | 174 | 0 | 0 | 0 | 0 | 0 | 0 | 0 |
| FRESHWATER TOTAL | 8,588[d] | 35,917 | 48,292 | 212 | 1,420 | 8,028 | 151 | 4,941 | 3,791 | 533 | 5,849 | 48 | 1,179 | 120 | 0 | 0 | 0 | 0 | 0 | 54 |
| GRAND TOTAL | 13,362[d] | 64,700 | 84,777 | 265 | 1,952 | 13,668 | 151 | 6,240 | 5,904 | 625 | 7,389 | 96 | 1,179 | 120 | 140 | 10,860 | 5,652 | 1,454 | 973 | 1,062 |

[a] Kodiak (Area Q): All Alaskan waters, including drainages, of the Kodiak and Afognak Island groups including the Barren and Trinity Islands.

[b] Refer to Appendix A3 for common names and species abbreviations.

[c] KI is chinook salmon less than 20 inches. KS is chinook salmon 20 inches and over.

[d] Angler totals may not equal sum of sites due to some anglers fishing at more than one site.

Appendix J2. Kodiak Area[a] sport fish catch and effort by fisheries and species[b], 1992.

| | Anglers | Trips | Days Fished | KI[c] | KS[c] | SS | LL | RS | PS | CS | DV AC | SH | RT | GR | SM | HA | RF | LC | RCL | OTHER |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| SALTWATER: | | | | | | | | | | | | | | | | | | | | |
| Boat - Chiniak Bay Area | 4,426 | 11,281 | 12,842 | 26 | 398 | 1,150 | 0 | 189 | 1,602 | 121 | 221 | 8 | 0 | 0 | 0 | 9,107 | 8,970 | 1,064 | 0 | 920 |
| Boat - Afognak Island Area | 1,845 | 3,178 | 4,584 | 9 | 39 | 2,243 | 0 | 674 | 494 | 45 | 475 | 23 | 0 | 0 | 0 | 2,315 | 2,025 | 868 | 0 | 368 |
| Boat - Barren Islands | 1,571 | 1,209 | 1,718 | 9 | 0 | 16 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 4,386 | 155 | 140 | 0 | 292 |
| Boat - Whale Passage | 324 | 386 | 587 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 1,094 | 129 | 159 | 0 | 22 |
| Boat - Shuyak Harbor | 274 | 586 | 1,099 | 0 | 0 | 866 | 0 | 0 | 321 | 0 | 0 | 0 | 0 | 0 | 0 | 543 | 86 | 75 | 0 | 0 |
| Boat - Other | 2,063 | 4,121 | 5,490 | 27 | 165 | 1,918 | 0 | 322 | 623 | 8 | 367 | 16 | 0 | 0 | 140 | 2,269 | 336 | 738 | 0 | 789 |
| Shoreline - Chiniak Bay Area | 1,595 | 3,976 | 5,107 | 0 | 47 | 931 | 0 | 0 | 3,004 | 281 | 3,269 | 16 | 0 | 0 | 0 | 150 | 1,163 | 47 | 595 | 44 |
| Shoreline - Afognak Island Area | 859 | 1,133 | 1,549 | 0 | 0 | 3,182 | 0 | 616 | 376 | 0 | 975 | 32 | 0 | 0 | 0 | 109 | 172 | 0 | 0 | 0 |
| Shoreline - Mill Bay | 224 | 1,446 | 1,291 | 0 | 117 | 624 | 0 | 0 | 9 | 0 | 25 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 11 |
| Shoreline - Other | 606 | 1,467 | 2,218 | 0 | 0 | 638 | 0 | 33 | 788 | 0 | 1,065 | 0 | 0 | 0 | 0 | 243 | 0 | 0 | 378 | 606 |
| SALTWATER TOTAL | 9,274[d] | 28,783 | 36,485 | 71 | 766 | 11,568 | 0 | 1,834 | 7,217 | 455 | 6,397 | 95 | 0 | 0 | 140 | 20,216 | 13,036 | 3,091 | 973 | 3,052 |
| FRESHWATER: | | | | | | | | | | | | | | | | | | | | |
| Buskin River | 3,952 | 14,073 | 15,482 | 0 | 0 | 2,097 | 0 | 3,279 | 5,267 | 84 | 10,577 | 116 | 499 | 0 | 0 | 0 | 0 | 0 | 0 | 0 |
| Pasagshak River | 2,393 | 4,724 | 6,359 | 0 | 55 | 2,899 | 0 | 773 | 962 | 380 | 1,458 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 141 |
| Karluk River and Lagoon | 1,658 | 2,182 | 5,430 | 1,058 | 2,552 | 2,437 | 0 | 5,432 | 1,749 | 144 | 8,668 | 178 | 760 | 0 | 0 | 0 | 0 | 0 | 0 | 11 |
| American River | 1,583 | 2,493 | 3,276 | 0 | 0 | 996 | 0 | 0 | 2,583 | 175 | 3,965 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 |
| Olds River (or Creek) | 1,895 | 4,026 | 5,079 | 0 | 0 | 1,806 | 0 | 0 | 2,885 | 805 | 1,253 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 |
| Red River (Ayakulik) | 1,010 | 835 | 3,340 | 697 | 3,278 | 2,599 | 0 | 5,022 | 733 | 0 | 1,106 | 78 | 356 | 0 | 0 | 0 | 0 | 0 | 0 | 11 |
| Saltery Creek | 237 | 449 | 480 | 0 | 0 | 437 | 0 | 230 | 330 | 30 | 1,090 | 8 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 |
| Saltery Cove Streams | 299 | 536 | 501 | 0 | 0 | 551 | 0 | 444 | 339 | 76 | 811 | 0 | 71 | 0 | 0 | 0 | 0 | 0 | 0 | 0 |
| Other Streams | 1,552 | 4,284 | 5,553 | 53 | 55 | 3,983 | 0 | 1,553 | 6,495 | 1,839 | 6,890 | 39 | 2,342 | 0 | 0 | 0 | 0 | 0 | 0 | 0 |
| Roadside Lakes | 769 | 1,817 | 2,261 | 0 | 0 | 688 | 205 | 468 | 0 | 0 | 1,401 | 16 | 1,298 | 165 | 0 | 0 | 0 | 0 | 0 | 0 |
| Other Lakes | 335 | 498 | 531 | 0 | 0 | 283 | 0 | 221 | 0 | 0 | 1,327 | 8 | 412 | 0 | 0 | 0 | 0 | 0 | 0 | 0 |
| FRESHWATER TOTAL | 8,588[d] | 35,917 | 48,292 | 1,808 | 5,940 | 18,776 | 205 | 17,422 | 21,343 | 3,533 | 38,546 | 443 | 5,738 | 165 | 0 | 0 | 0 | 0 | 0 | 163 |
| GRAND TOTAL | 13,362[d] | 64,700 | 84,777 | 1,879 | 6,706 | 30,344 | 205 | 19,256 | 28,560 | 3,988 | 44,943 | 538 | 5,738 | 165 | 140 | 20,216 | 13,036 | 3,091 | 973 | 3,215 |

[a] Kodiak (Area Q): All Alaskan waters, including drainages, of the Kodiak and Afognak Island groups including the Barren and Trinity Islands.

[b] Refer to Appendix A3 for common names and species abbreviations.

[c] KI is chinook salmon less than 20 inches. KS is chinook salmon 20 inches and over.

[d] Angler totals may not equal sum of sites due to some anglers fishing at more than one site.

Appendix J3. Naknek River drainage-Alaska Peninsula Area[a] sport fish harvest and effort by fisheries and species[b], 1992.

| | Anglers | Trips | Days Fished | KI[c] | KS[c] | SS | RS | KO | PS | CS | LT | DV AC | RT | GR | WF | NP | BB | SM | HA | RF | LC | OTHER |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| SALTWATER: | | | | | | | | | | | | | | | | | | | | | | |
| Boat - Cold Bay Area | 411 | 885 | 1,163 | 106 | 70 | 380 | 0 | 0 | 0 | 15 | 0 | 66 | 0 | 0 | 0 | 0 | 0 | 0 | 318 | 0 | 19 | 0 |
| Boat - Adak Island Area | 1,009 | 3,353 | 3,546 | 0 | 16 | 121 | 526 | 0 | 1,512 | 0 | 0 | 688 | 0 | 0 | 0 | 0 | 0 | 0 | 1,086 | 250 | 215 | 43 |
| Boat - Other | 881 | 3,334 | 4,861 | 0 | 0 | 266 | 140 | 0 | 257 | 0 | 0 | 49 | 0 | 0 | 0 | 0 | 0 | 1,082 | 1,183 | 560 | 65 | 476 |
| Shoreline | 808 | 3,315 | 4,333 | 18 | 0 | 332 | 804 | 0 | 769 | 258 | 0 | 1,007 | 0 | 0 | 0 | 0 | 0 | 0 | 58 | 104 | 0 | 11 |
| SALTWATER TOTAL | 2,393[d] | 10,887 | 13,903 | 124 | 86 | 1,099 | 1,470 | 0 | 2,538 | 273 | 0 | 1,810 | 0 | 0 | 0 | 0 | 0 | 1,082 | 2,645 | 914 | 299 | 530 |
| FRESHWATER: | | | | | | | | | | | | | | | | | | | | | | |
| Cold Bay Area (including Russel Creek) | 648 | 1,633 | 3,094 | 9 | 0 | 1,304 | 452 | 0 | 137 | 15 | 0 | 950 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 11 |
| Adak Island Area | 835 | 5,061 | 4,812 | 0 | 0 | 445 | 123 | 736 | 2,894 | 0 | 0 | 1,319 | 16 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 325 |
| Naknek River & Tributaries | 4,076 | 10,957 | 14,436 | 1,376 | 1,257 | 1,579 | 641 | 0 | 119 | 175 | 8 | 721 | 705 | 316 | 55 | 68 | 0 | 14,235 | 0 | 0 | 0 | 0 |
| Brooks River | 1,882 | 2,580 | 6,605 | 44 | 0 | 24 | 904 | 0 | 101 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 |
| American Creek | 312 | 499 | 939 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 8 | 8 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 |
| Chignik River | 262 | 898 | 896 | 71 | 164 | 24 | 123 | 0 | 0 | 0 | 0 | 57 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 |
| King Salmon River | 411 | 474 | 918 | 88 | 94 | 24 | 0 | 0 | 9 | 0 | 0 | 33 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 |
| Other Streams | 1,050 | 2,811 | 4,007 | 114 | 101 | 744 | 239 | 0 | 330 | 45 | 0 | 655 | 16 | 23 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 |
| Ugashik System | 585 | 1,096 | 2,001 | 9 | 63 | 445 | 8 | 0 | 0 | 8 | 39 | 41 | 0 | 0 | 0 | 17 | 0 | 0 | 0 | 0 | 0 | 0 |
| Becharof System | 573 | 1,446 | 1,634 | 0 | 16 | 275 | 485 | 0 | 0 | 8 | 0 | 180 | 32 | 143 | 0 | 0 | 0 | 541 | 0 | 0 | 0 | 325 |
| Naknek Lake - Bay of Islands | 623 | 898 | 2,838 | 9 | 16 | 32 | 41 | 0 | 0 | 8 | 39 | 66 | 222 | 0 | 0 | 60 | 0 | 0 | 0 | 0 | 0 | 0 |
| Naknek Lake - Other | 611 | 711 | 2,411 | 53 | 16 | 73 | 90 | 0 | 0 | 0 | 39 | 0 | 63 | 0 | 0 | 68 | 0 | 0 | 0 | 0 | 0 | 0 |
| Brooks Lake | 461 | 661 | 2,262 | 0 | 0 | 0 | 123 | 0 | 0 | 0 | 116 | 8 | 40 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 |
| Other Lakes | 497 | 597 | 659 | 18 | 0 | 56 | 0 | 0 | 9 | 0 | 15 | 140 | 8 | 0 | 0 | 43 | 0 | 0 | 0 | 0 | 0 | 0 |
| FRESHWATER TOTAL | 9,000[d] | 30,322 | 47,512 | 1,791 | 1,727 | 5,025 | 3,229 | 736 | 3,599 | 259 | 264 | 4,178 | 1,102 | 482 | 55 | 256 | 0 | 14,776 | 0 | 0 | 0 | 661 |
| GRAND TOTAL | 10,446[d] | 41,209 | 61,415 | 1,915 | 1,813 | 6,124 | 4,699 | 736 | 6,137 | 532 | 264 | 5,988 | 1,102 | 482 | 55 | 256 | 0 | 15,858 | 2,645 | 914 | 299 | 1,191 |

[a] Naknek River Drainage-Alaska Peninsula (Area R): All Alaskan waters, including drainages, between Cape Douglas and the community of Naknek; including the Naknek River drainage, and the Aleutian Island chain. Does not include Cape Douglas.

[b] Refer to Appendix A3 for common names and species abbreviations.

[c] KI is chinook salmon less than 28 inches. KS is chinook salmon 28 inches and over.

[d] Angler totals may not equal sum of sites due to some anglers fishing at more than one site.

Appendix J4. Naknek River drainage-Alaska Peninsula Area[a] sport fish catch and effort by fisheries and species[b], 1992.

| | Anglers | Trips | Days Fished | KI[c] | KS[c] | SS | RS | KO | PS | CS | LT | DV AC | RT | GR | WF | NP | BB | SM | HA | RF | LC | OTHER |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| SALTWATER: | | | | | | | | | | | | | | | | | | | | | | |
| Boat - Cold Bay Area | 411 | 885 | 1,163 | 159 | 70 | 680 | 0 | 0 | 92 | 403 | 0 | 558 | 0 | 0 | 0 | 0 | 0 | 0 | 894 | 34 | 1,027 | 0 |
| Boat - Adak Island Area | 1,009 | 3,353 | 3,546 | 0 | 39 | 267 | 1,076 | 0 | 3,966 | 0 | 0 | 925 | 0 | 0 | 0 | 0 | 0 | 0 | 1,521 | 586 | 1,241 | 130 |
| Boat - Other | 881 | 3,334 | 4,861 | 0 | 16 | 379 | 156 | 0 | 1,081 | 767 | 0 | 270 | 0 | 0 | 0 | 0 | 0 | 1,082 | 3,004 | 1,662 | 130 | 834 |
| Shoreline | 808 | 3,315 | 4,333 | 44 | 0 | 332 | 936 | 0 | 1,851 | 661 | 0 | 2,974 | 0 | 0 | 0 | 0 | 0 | 0 | 267 | 172 | 597 | 368 |
| SALTWATER TOTAL | 2,393[d] | 10,887 | 13,903 | 203 | 125 | 1,658 | 2,168 | 0 | 6,990 | 1,831 | 0 | 4,727 | 0 | 0 | 0 | 0 | 0 | 1,082 | 5,686 | 2,454 | 2,995 | 1,332 |
| FRESHWATER: | | | | | | | | | | | | | | | | | | | | | | |
| Cold Bay Area (including Russel Creek) | 648 | 1,633 | 3,094 | 9 | 0 | 1,790 | 657 | 0 | 632 | 630 | 0 | 2,720 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 346 |
| Adak Island Area | 835 | 5,061 | 4,812 | 0 | 0 | 632 | 123 | 2,066 | 4,745 | 0 | 0 | 2,884 | 253 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 325 |
| Naknek River & Tributaries | 4,076 | 10,957 | 14,436 | 2,399 | 2,100 | 2,745 | 1,471 | 0 | 1,814 | 517 | 93 | 3,490 | 14,850 | 2,630 | 64 | 325 | 0 | 15,609 | 0 | 0 | 0 | 0 |
| Brooks River | 1,882 | 2,580 | 6,605 | 344 | 47 | 429 | 5,515 | 0 | 101 | 23 | 23 | 172 | 9,634 | 977 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 |
| American Creek | 312 | 499 | 939 | 0 | 0 | 0 | 33 | 0 | 0 | 0 | 139 | 4,645 | 2,889 | 286 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 |
| Chignik River | 262 | 898 | 896 | 256 | 421 | 275 | 953 | 0 | 46 | 0 | 0 | 533 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 |
| King Salmon River | 411 | 474 | 918 | 282 | 148 | 40 | 0 | 0 | 9 | 0 | 0 | 107 | 348 | 30 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 |
| Other Streams | 1,050 | 2,811 | 4,007 | 353 | 842 | 1,805 | 493 | 0 | 2,574 | 456 | 386 | 7,234 | 2,501 | 1,165 | 0 | 26 | 0 | 0 | 0 | 0 | 0 | 0 |
| Ugashik System | 585 | 1,096 | 2,001 | 362 | 500 | 1,166 | 625 | 0 | 183 | 395 | 170 | 499 | 467 | 518 | 9 | 60 | 0 | 97 | 0 | 0 | 0 | 0 |
| Becharof System | 573 | 1,446 | 1,634 | 44 | 23 | 842 | 1,323 | 0 | 18 | 84 | 8 | 5,260 | 1,195 | 1,082 | 0 | 51 | 0 | 541 | 0 | 0 | 0 | 325 |
| Naknek Lake - Bay of Islands | 623 | 898 | 2,838 | 26 | 16 | 40 | 419 | 0 | 0 | 304 | 648 | 729 | 3,150 | 150 | 0 | 1,093 | 0 | 0 | 0 | 0 | 0 | 0 |
| Naknek Lake - Other | 611 | 711 | 2,411 | 71 | 16 | 283 | 764 | 0 | 256 | 0 | 116 | 33 | 1,021 | 113 | 0 | 342 | 0 | 0 | 0 | 0 | 0 | 0 |
| Brooks Lake | 461 | 661 | 2,262 | 0 | 0 | 40 | 304 | 0 | 0 | 0 | 609 | 459 | 1,781 | 75 | 0 | 17 | 0 | 0 | 0 | 0 | 0 | 0 |
| Other Lakes | 497 | 597 | 659 | 18 | 0 | 80 | 156 | 43 | 27 | 0 | 1,126 | 737 | 72 | 53 | 0 | 94 | 0 | 0 | 0 | 0 | 0 | 0 |
| FRESHWATER TOTAL | 9,000[d] | 30,322 | 47,512 | 4,164 | 4,113 | 10,167 | 12,836 | 2,109 | 10,405 | 2,409 | 3,318 | 29,502 | 38,161 | 7,079 | 73 | 2,008 | 0 | 16,247 | 0 | 0 | 0 | 996 |
| GRAND TOTAL | 10,446[d] | 41,209 | 61,415 | 4,367 | 4,238 | 11,825 | 15,004 | 2,109 | 17,395 | 4,240 | 3,318 | 34,229 | 38,161 | 7,079 | 73 | 2,008 | 0 | 17,329 | 5,686 | 2,454 | 2,995 | 2,328 |

a Naknek River Drainage-Alaska Peninsula (Area R): All Alaskan waters, including drainages, between Cape Douglas and the community of Naknek; including the Naknek River drainage, and the Aleutian Island chain. Does not include Cape Douglas.

b Refer to Appendix A3 for common names and species abbreviations.

c KI is chinook salmon less than 28 inches. KS is chinook salmon 28 inches and over.

d Angler totals may not equal sum of sites due to some anglers fishing at more than one site.